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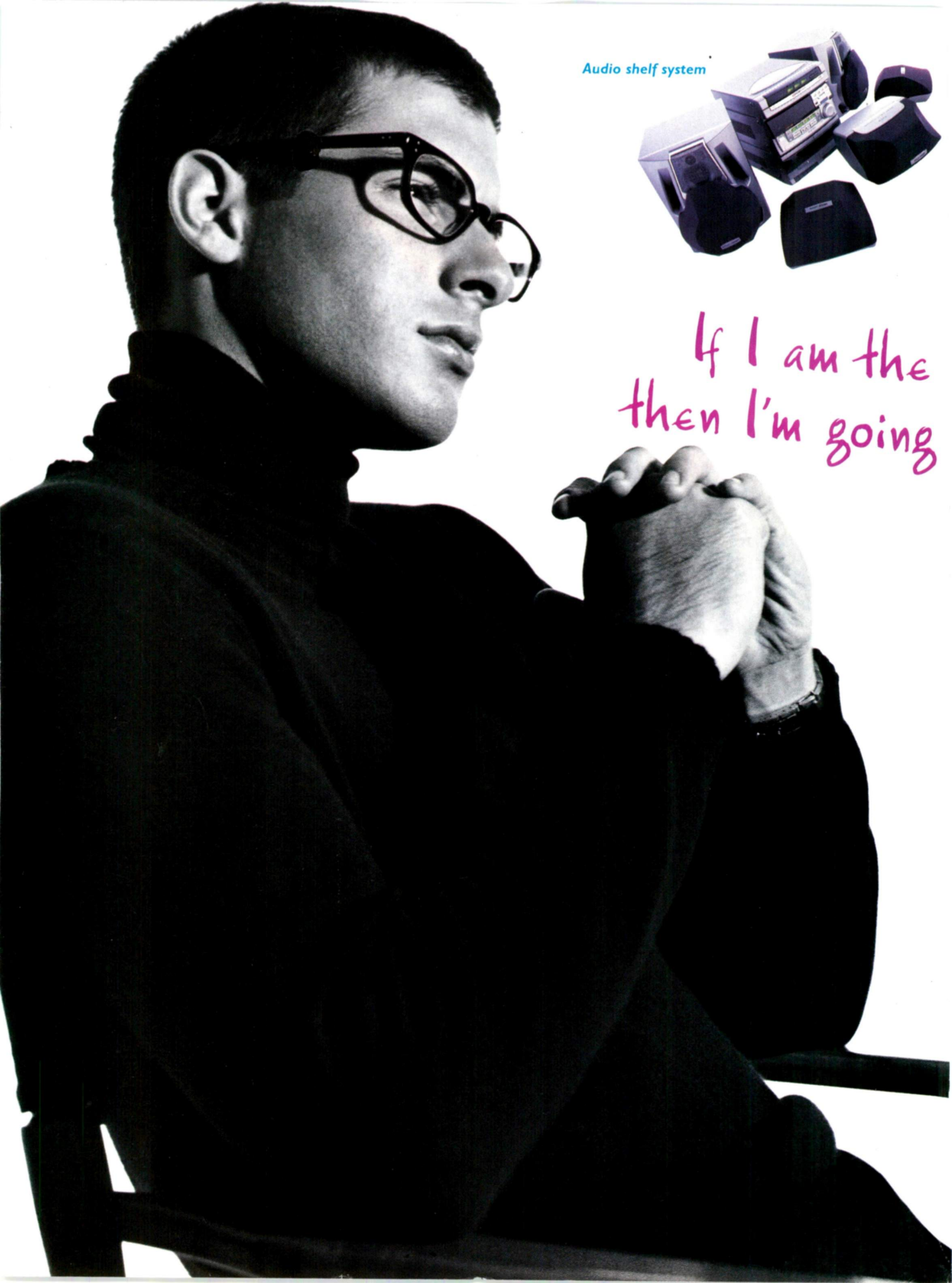




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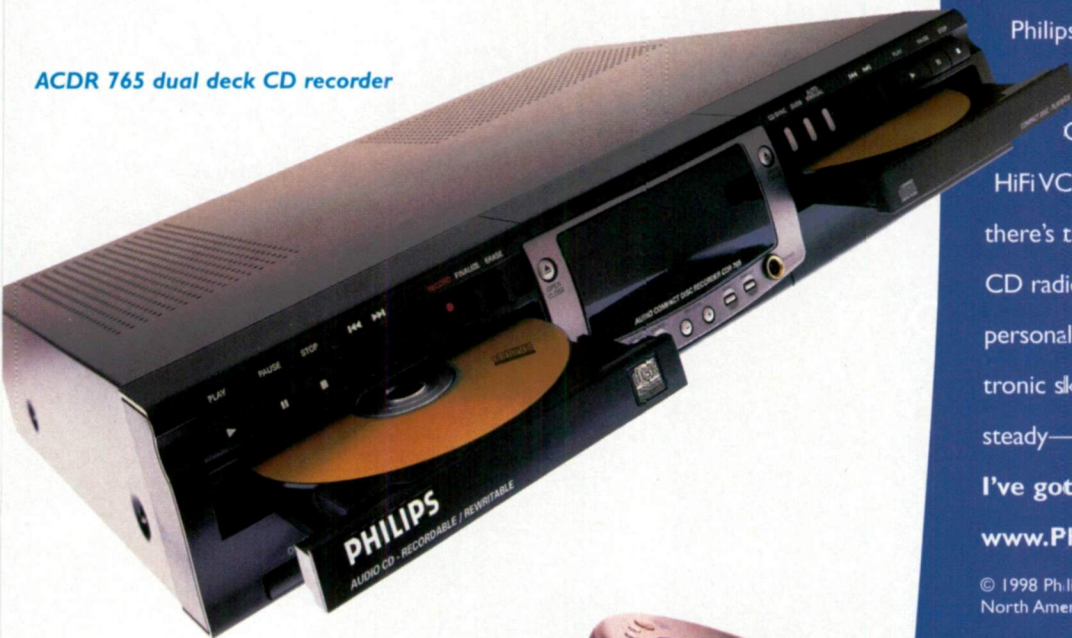
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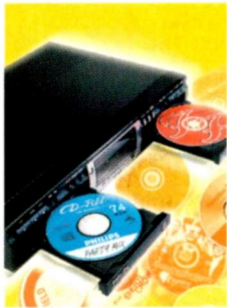


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ON THE COVER

Digital recording is the way to go at home as well as in the recording studio! See page 64 for details on the Philips CDR 765, a dual-tray CD recorder/player, and page 33 for JVC's CD changer/MiniDisc recorder.

Digital imaging by
Chris Gould

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59 A Guide to Digital Home Recorders

Whether you're shopping for recordable-CD or MiniDisc gear, our guide keeps it simple.

BY KEN C. POHLMANN



64 Send in the Clones

First tests of the Philips CDR 765, a "dubbing" recorder that makes compilation CDs with ease and copies whole discs at 2X speed.

BY DAVID RANADA

68 Triple Play

Three DVD players step up to the plate — which one will run all the way home?

BY DAVID RANADA

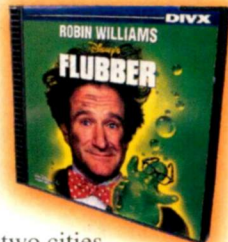


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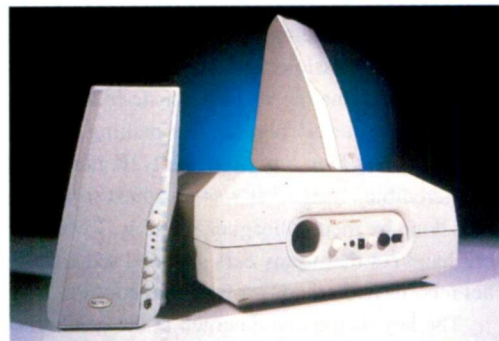
Is America ready for pay-per-view videodiscs? Laura Evenson and Gregory J. Gilligan report on how Divx is playing in two cities.



78 Multimedia Speaker Sound-Off

Tired of listening to those throwaway boxes that came with your PC? Give one of these systems a try.

BY TOM NOUSAINE



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TRACK ONE

BOB ANKOSKO

Beyond Two-Channel

A FEW MONTHS AFTER Elliot Scheiner finished mixing a 5.1-channel version of the classic Steely Dan album *Gaucho* for the DTS label, he stopped in an audio shop while his car was getting new tires at a garage next door. He was checking out a multichannel amp when a salesman walked up and offered to play a CD. The next thing he knew, *Gaucho* was playing and the salesman was yakking about how he didn't really like the new version because the horns and vocals were coming from the rear. "Well, I *loved* it that way," Scheiner said, recalling the chance encounter. "Donald [Fagen] and Walter [Becker] loved it that way, too. But this guy hated it! I didn't tell him I mixed it — I was embarrassed."

That's just one of many great stories told at the historic 5.1 Multichannel Music Mixing conference in New York City this past spring, sponsored by the Music Producer's Guild of the Americas (MPGA). I say "historic" because it was the first time top music producers and recording engineers got together to explore what MPGA president Ed Cherney called "an emerging technical challenge." For many of the 250 attendees — mostly middle-aged guys steeped in the traditions of two-channel stereo — the conference was a crash course in the art of multichannel recording, with panel discussions and ongoing 5.1-channel music demos at a nearby studio.

It was fascinating to hear music-industry legend Phil Ramone talk about the "learning process" behind the making of his 5.1-channel recording of Dave Grusin's *West Side Story*, on the N2K label, and conclude that "we're headed for an incredible change." It was also neat to hear big-shot producers critique recordings done by their colleagues. Frankly, I was surprised by the praise heaped on one big-band cut that to my ears sounded remarkably sterile for a full-blown 5.1-channel recording. Perhaps professional courtesy was at work.

The key theme that emerged at the conference was that "there are no rules" for making a good multichannel recording, which represents an opportunity to create a whole new listening experience. As Al Schmitt, who has worked with artists ranging from Sinatra to Madonna, put it: "Some guys like a lot of things coming from the back. I'm not particularly fond of that — I like to hear the orchestra in front and have the ambience behind me." Alan Parsons, an accomplished artist and producer/engineer, said he prefers recording with four channels and noted that "horn parts and backing vocals really work well coming at you from behind."

A number of recording engineers also criticized the idea, put forth by the DVD-Audio camp, that a disc can contain instructions enabling the player to automatically "fold down" a 5.1-channel mix to two-channel stereo. "I haven't done a 5.1-channel recording in pop, classical, jazz, or anything else that will fold down properly into two channels," said Telarc's Michael Bishop.

As the recording industry gears up for the brave new world of multichannel recording, which clearly has the potential to take audio as we know it to the next level, there are sure to be a lot of disagreements about the "right" way to do a multichannel mix. Let the producers argue. But I appeal to the manufacturers of consumer audio hardware to avoid a format war at all costs. Let's not screw this up.

Bob Ankosko, Editor in Chief

StereoReview

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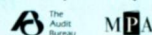
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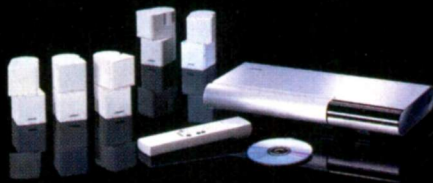


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RANDOMplay

EDITED BY BRIAN FENTON

A/V Digest

The anti-Divx crowd should be breathing a little easier now that Fox has jumped on the DVD bandwagon, leaving relative newcomer DreamWorks as the lone Divx-only Hollywood studio. Fox's commitment to the format is still unclear, however. Rather than release such blockbusters as *Star Wars* or *Independence Day*, Fox announced a curious collection of eight DVD titles including *Young Frankenstein*, *Porky's*, and *Home Alone 3* at relatively high prices of \$30 and \$35. . . . The French government has agreed to sell as much as 30 percent of state-owned Thomson Multimedia — which owns the RCA, GE, and ProScan A/V brands in the U.S. — to Microsoft, DirecTV, NEC, and Alcatel. . . . IBM and NEC have agreed to merge their digital-watermark technologies in the hope that the combined system will be chosen for DVDs by the Copy Protection Technical Working group. The companies boast about the durability of IBM's watermark



TV Trivia

If you've seen the Discover card commercial with New York Yankees shortstop/heartthrob Derek Jeter and wondered about those tall, stylish speakers, here's the scoop. They're the ReRequests, a pair of \$4,495-a-pair electrostatics from the Kansas-based high-end manufacturer Martin-Logan. The speakers were flown in for the shoot at the behest of the advertising agency, then flown right back to the manufacturer. Whether Jeter actually owns a pair of Martin-Logans is anybody's guess.

— Michael Gaughn

and that NEC's technology allows "re-marking" for one-time copying.

Looking Back At Lenny

Coinciding with observances of the 80th anniversary of the birth of Leonard Bernstein (1918-1990), this month PBS will broadcast a two-hour original film biography of the great conductor/composer in its presti-

gious American Masters series. Like George Gershwin, Bernstein succeeded as a composer of both classical music and Broadway shows, such as *West Side Story*. Music director of the New York Philharmonic from 1959 to 1969, Bernstein was also a celebrated TV personality, writer, and recording artist. Through network shows in the 1950s and 1960s like the *Young People's Concerts*, he introduced

a generation of American TV viewers to classical music.

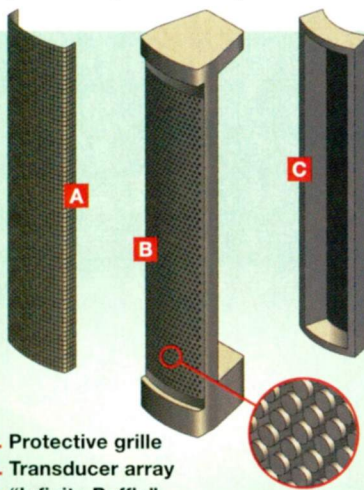
The PBS bio features interviews with Bernstein's family and such friends and colleagues as Stephen Sondheim, Michael Tilson Thomas, Isaac Stern, and the choreographer Jerome Robbins (who died in July). Deutsche Grammophon plans to release a soundtrack CD of the documentary. *Leonard Bernstein: Reaching for the Note* is

Digi-Speak

Digital changes everything. Remember audio before CD? Remember video before DVD? Remember speakers before . . . oops. We're not there yet.

Just imagine what digital technology could do if it were applied to speakers. The concept might seem kind of hard to grasp — after all, a speaker's gotta be analog, right? Not according to Tony Hooley of 1 . . . Ltd., a start-up company in Cambridge, England, that claims to be the first to develop a completely digital speaker. While there are so-called digital speakers on the market, they're merely traditional speakers with digital-to-analog (D/A) converters and maybe some digital signal processing (DSP) built in (and usually amplifiers as well). Hooley's system is a totally different animal.

The key to Hooley's digital speaker is *unary* rather than *binary* encoding. In a bina-



A. Protective grille
B. Transducer array
C. "Infinite Baffle"

ry system, just eight transducers would be required to provide, for example, an 8-bit resolution, which would result in 256 discrete sound-amplitude levels. However, that approach has proved to be impractical for

speakers because of the transitions inherent in binary systems.

In Hooley's proposed unary system, 256 individual, equally weighted transducers would be used. Although that's equivalent to only an 8-bit resolution, he says that eight-times oversampling and interpolation at rates above the 44.1-kHz CD sampling rate would allow his system to have fidelity matching the 16-bit CD. "Essentially, instead of delivering 16 bits every 22.7 microseconds (μ s), we deliver 8 bits every 5.7 or 2.8 μ s, so we output *more* bits per second than the original signal." He claims the system is far more efficient than traditional speakers.

Hooley admits that his prototype — built using 80 smoke-alarm transducers — sounds terrible. But he's working on making, or finding, better transducers and customizing them for the job. His company has no plans to *build* any speakers but is instead developing the technology for eventual license to speaker manufacturers.

— B.F.

scheduled to air at 9 p.m. EST, October 28.

Mixing Your Own Discs

With stand-alone CD recorders becoming more widely available, and even CD dubbing recorders like the Philips CDR 765 (shown on this month's cover), it's safe to say that making your own compilation CDs has never been easier. But it can be kind of expensive to go out and buy a bunch of CDs just so you can legally copy one or two tracks from each one. And that opens up the market to on-demand CD publishers like Custom Revolutions (www.customdisc.com) and superSonic BOOM (www.supersonicboom.com).

Visit either Web site, choose the tracks you're interested in from the songs listed on the site, specify the order you want them on the disc, supply your credit-card information, and you'll have a custom CD on its way to you for a reasonable price — a 10-track CustomDisc costs \$15.99 plus shipping. You get the CD, the record company gets its royalties (mostly from back-catalog discs) the on-demand publisher takes its cut, and everyone is happy. It's just one more example of how the Internet is changing the way we buy music.

And the Winner Is...

In Rhino Records' second annual Musical Aptitude Test (RMAT), Peter Tomlinson, of New York City, has been declared Ultimate Musical Trivia Expert (a.k.a. *Geekus musicus maximus*), with a score of 260 out of a possible 305. The 1-hour-long, 300-question exam was given at Tower Records stores in seven major cities across the nation and on the Internet. The valuable prizes include a jukebox, sneakers, snowboards, and — best of all — a copy of every future Rhino release during the winner's lifetime!

Tomlinson lives in Manhattan with his wife and a couple of cats. He is an art archivist at Culver Pictures, an image bank. "It was like taking the SATs all over again, all multiple choice," he said. "I did best on questions about classic rock and had the most trouble with rap and other current styles." How did he get so smart? In his youth Tomlinson was a freelance writer for the rock journals of the day and, of course, at an early age he became a reader of *Stereo Review*. — William Livingstone

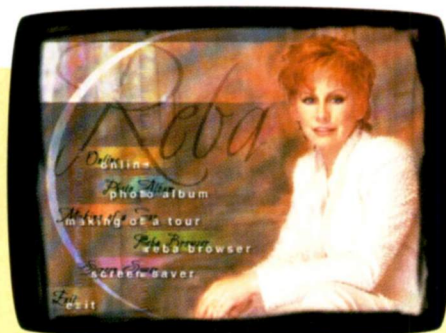


Kind of Enhanced

What do you think of enhanced CDs? What? You've never heard of 'em? I'm not surprised. Record companies have been doing a terrible job of marketing — and marketing — enhanced CDs, which are basically CDs containing extra graphic content that can be accessed on a multimedia computer. You might have several enhanced CDs in your collection and not even know it because most aren't labeled as such.

Reba McEntire's current album, *If You See Him* (MCA Nashville), is an enhanced CD done right. Not only does it have compelling content — behind-the-scenes tour footage (including 360-degree IPIX views), a photo album, a screen saver, and a Reba Browser, which helps you find Reba-related content on the Internet — but right there on the front cover is the enhanced-CD logo. The back cover lists the minimum system requirements (basically Mac System 7.1 or Windows 95), and the back cover of the booklet inside lists some of the content. If you buy the CD, you *know* it's enhanced.

Sony is taking a different tack with the latest reissue of Miles Davis's classic *Kind of Blue*. Rather than putting extra content on the disc it-



self, Sony ConnectedD technology links the CD to multimedia content on the Web. You can pop the disc into your CD-ROM drive, access the www.sonymusic.com/thelab/ConnectedD Web site, and then, for example, read an analysis of Miles's "So What" solo while the music plays from the CD and the notes are displayed on screen. The advantage of doing things this way is that added content can be developed for older recordings. To prove the point, Ozzy Osbourne's *Blizzard of Oz*, originally released (on vinyl) in 1980, is one of the CDs for which Sony has developed new Web-based multimedia content. How are you supposed to find out about all this? I guess you're supposed to read about it in *Stereo Review*. Sony makes no mention of it on the Miles Davis or Ozzy Osbourne CDs or in their liner notes. — B.F.

DVD Regional Codes Cracked

Videophiles sometimes grouse about DVD regional coding, which divides the world into six regions and prevents coded discs bought in one region from working in a player bought in another region. Here in the U.S. it hasn't been too big of an

issue, mainly because the world's most popular movies, which come from Hollywood, are released here first. In Europe, however, videophiles are apparently tired of waiting months for movies to be released over there — and often at higher prices. A rather large number of Web sites have sprung up advertising DVD players modified to play discs from any region as well as modification kits for machines from Denon, JVC, Panasonic, Pioneer, RCA, Sony, Yamaha, and others.

Hot Off the Press

Due this month from Scribner's is a biography of the Metropolitan Opera's artistic director, *Dialogues and Discoveries / James Levine: His Life and His Music* (\$27.50), by the noted critic Robert C. Marsh. Also scheduled is William Berger's *Wagner Without Fear* (Vintage Books, \$15). "It's not Wagner for dummies," Berger says, "but Wagner for intelligent people." The book is subtitled *Learning to Love — and Even Enjoy — Opera's Most Demanding Genius*.

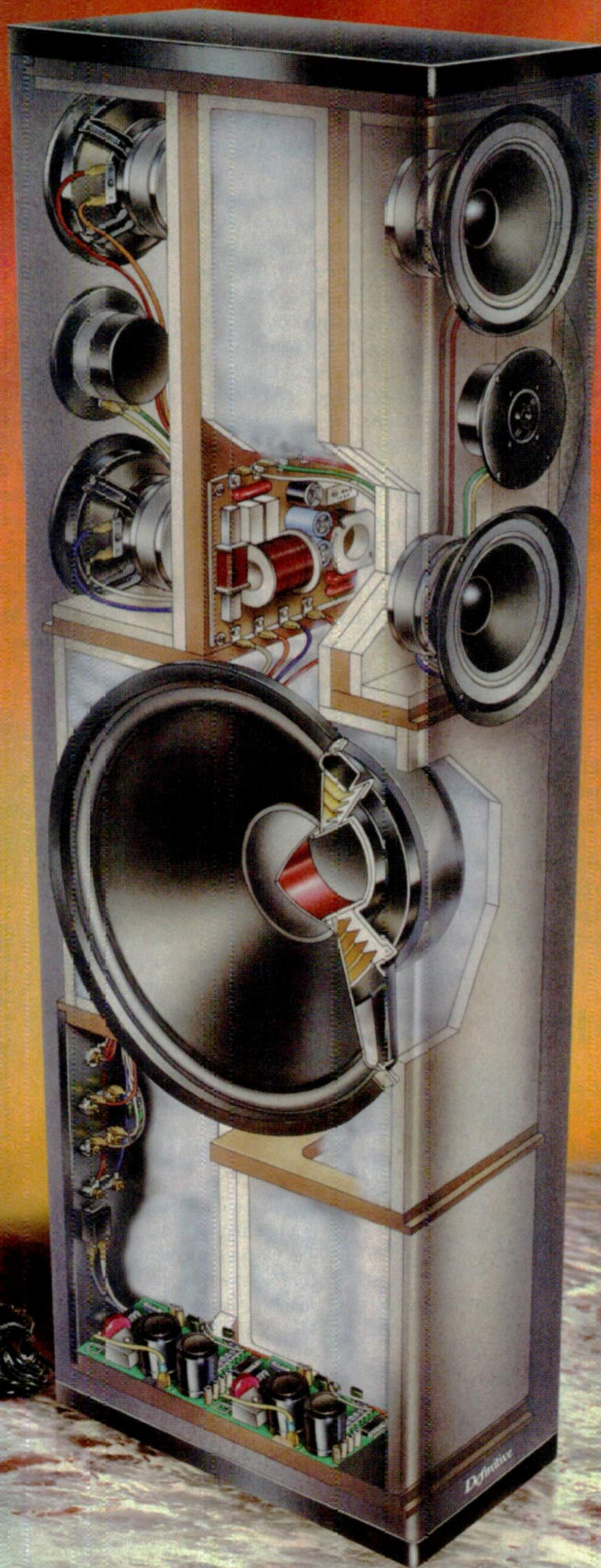
Shall We Dance?

Sharyn Wolf is a leading romance expert and the author of *Guerrilla Dating Tactics*. In an article

about how to marry a rich girl in the men's magazine *Maxim*, she said, "You'll definitely need to know how to tango, so take some lessons before you start your dating."

A new how-to book should help: *Quickstart to Tango* by Jeff Allen (QQS Publications, \$19.95). For music to practice with, try the two-CD soundtrack of the Broadway hit *Forever Tango* (RCA Victor). For a free catalog of tango CDs, books, and instructional videos, contact Bridge to Tango, P.O. Box 560127, West Medford, MA 02156; phone, 617-666-8518; fax, 617-666-4316; Web, www.tangobridge.com/dtango7. Good luck, and happy hunting! — W.L.

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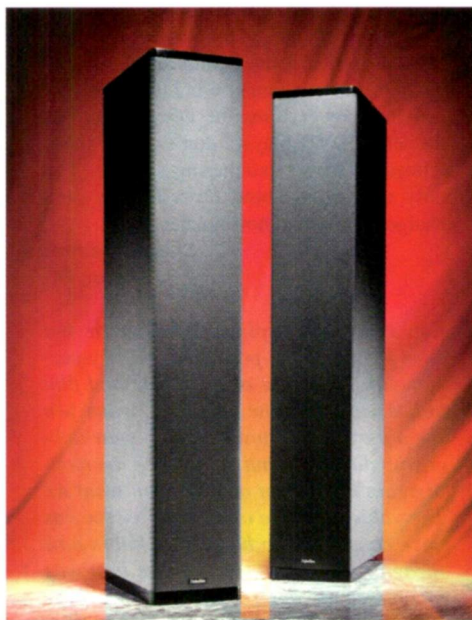
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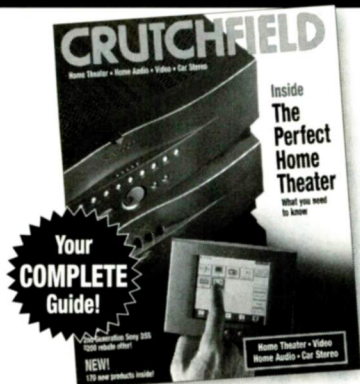
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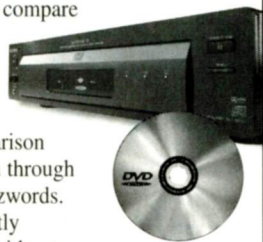
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LETTERS

Divx Bashing

A big cheer to Corey Greenberg for his excellent review in September of one of the dumbest products to be introduced to the audio/video market, the Zenith/Inteq DVX2100 Divx/DVD player. He was right on when he wrote, "I'm convinced now more than ever that Divx will be the biggest and most costly flop in the history of consumer electronics. Your \$500 is better spent on a DVD player without Divx." The sooner Divx dies, the better!

An even bigger jeer to Ken C. Pohlmann for his positive spin on Divx in the same review. Until I read this review, I had a great deal of respect for Mr. Pohlmann. I could not believe that he wrote, "I like the Divx concept. I think it is a harbinger of how movies and music will be delivered in the future." What the hell is he thinking! Does this mean he wants pay-per-listen CDs, or pay-per-read books or pay-per-use software? The only logical explanation is that the person who wrote this review is not really Ken C. Pohlmann but an evil robot twin! He must be stopped!

Eric R. Hamilton
Renton, WA

Let me see if I have this right: Corey Greenberg, who admits to hating Divx, says it is a terrible product, loaded with problems. Ken Pohlmann, who has supported it, says he had no trouble with his player and that we should all consider buying one. Why do I feel as if I'm listening to descriptions of Monica Lewinsky by Bill Clinton and Ken Starr? I think you owe it to your readers to get at least a semi-detached evaluation of the product.

Clayton Curtiss
Orange, CT

Ken Pohlmann says that the Divx machine does "everything a DVD player does and more." He then lists a few features found on DVD players that the Zenith/Inteq does not include, and nowhere else in his review will you find any features the Divx player has that other DVD players don't except those related to Divx's purchasing scheme. The only new thing about Divx is how they charge people, and how much.

Shane Buettner
Denver, CO

Ken Pohlmann replies: Whether or not Divx prospers, pay-per-listen and pay-per-view are the future of the music and film industries. Last time I checked, when you see a movie at a movie theater, your ticket stub doesn't permit you to see the movie again and again anytime you want to. The value of movie and music assets was once considered to be fleeting but is now recognized as long-lasting. The best way to protect the asset's value is to charge

each time it is used. Movie theaters, restaurants, and almost all other businesses operate on this principle, so why are people so opposed when creative artists, or those who market their work, do the same thing? Regarding the Divx player per se, I was clear in assessing its faults; its forte is that it offers choice and diversity.

Contents Under Pressure

Concerning Ken Pohlmann's column on copyright infringement, "Contents Under Pressure" (August "Signals"), I have to disagree with his statement that "when you copy a CD you haven't paid for, you're stealing." As a musician, I don't see things in such pure black and white. I have copied CDs that I did not own, but I later purchased them if I found the material to be exceptional. If people like an album, they'll buy other albums the artist has released or will release in the future. I consider a copy passed on to a friend to be promotional.

Also, if a CD is copied onto digital audio tape or a consumer CD-R/RW, a royalty has already been assessed and paid by the user (which is unfortunate for those of us who record our own original music). If I'm already paying the royalty, that should make it legal to copy whatever I want.

Since Mr. Pohlmann has indirectly called me a thief, I'd like to ask if he has ever read somebody else's newspaper or magazine? Or photocopied anything except his original work? Or recorded a TV show with his VCR? Are those stealing?

Greg Forgette
Franklin, TN

I am not in the bootlegging business, nor am I a thief. If I want to tape a CD from my own collection or one I borrow from a friend, I see absolutely nothing wrong with it. The disc has already been paid for, and I paid dearly for my tape decks. What else would Mr. Pohlmann suggest I do with them?

Steve Oromaner
St. Petersburg, FL

Ken Pohlmann is increasingly using his column as a soapbox for the music and movie industries' paranoid, anti-consumer views. He and his entertainment-industry cronies won't settle for anything less than a total end to all forms of consumer audio and video recording.

Phil Cohen
Bay Harbor, FL

Ken Pohlmann lamented the loss of artists' revenue that occurs when people copy music or other intellectual property. In the case of music, you can lay much of the blame on the record companies.

The tolerance of even fair-minded citizens has limits, and mine are exceeded by

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— Julian Hirsch, Stereo Review

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— Brent Butterworth, Home Theater

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— Brent Butterworth, Home Theater

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— Julian Hirsch, Stereo Review

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any record company that expects me to pay \$16 for one song. If a song is issued as a single for radio airplay, it had better be available as a CD single at a reasonable price. Otherwise, people are going to borrow the album from a friend and copy the one song they like, or buy the album, copy the song, and resell the disc. **Gavin Stokes**
Chicago, IL

As an audiophile and a serious songwriter, I find the idea of copying a CD rather than buying it absurd. I buy albums to enjoy not only the music but also the liner notes, the cover art, and even the label on the LP or CD. It's a package deal.

This is not to say that I haven't had audio uses for my CD-RW computer drive. First and most important is making back-up copies of out-of-print CDs. Second is making compilation CDs for car and, occasionally, home listening. Third, it's a form of theft-proofing. Who wants to risk having favorite CDs stolen out of a car? Not I. Finally, I plan to record my own music on CD, and I don't want the hassle of using a consumer audio CD recorder that automatically assigns copy-protection flags.

I am hardly against artists getting recognition for the songs they write or perform. But Mr. Pohlmann's numbers seem to clash with reality in the case of wealthy artists like Madonna. Royalties should help new artists rather than the bigger names.

Daniel J. Fontes
Monticello, IN

Ken Pohlmann replies: These letters advance all the traditional reasons for monkeying around with the intellectual property rights of others. I guess people will invent all kinds of excuses so that they can sleep at night. For example, one reader argues that since Madonna is rich, it's okay to steal from her. I don't think so. Each year billions of dollars are lost to both professional and casual music copiers. This isn't an imaginary loss but a real one, and we all pay for it in the form of higher CD prices. Moreover, it is destructive to artists and their industry.

In a decision between artists' rights and listeners' rights, I'll always side with the artists. Without artists, there would be no listeners. That being said, let me emphasize that I am not trying to negate fair use as permitted under current copyright law. I am, however, calling for a renewed examination of how we can support fair copyright laws in the face of powerful new copying technology.

Should You Buy DVD?

Your wonderful writers have convinced me to buy a DVD player. This was a hard thing to do, for I am — or, rather, was — a die-

hard laserdisc fan. But thus far the DVD player has proven to be an incredible addition to my home theater.

I have one question: now that Paramount has jumped onto the DVD bandwagon, will it release *Titanic* on DVD? And if so, will the studio be able to compress all 3 hours and 20 minutes on one side of the disc? Will it be encoded with Dolby Digital or DTS surround sound? Or will it end up being released in that God-forsaken format known as Divx? I'd love to know, because this movie is truly a must-have. **Olga Perez**
Chicago, IL

Paramount recently released Titanic on VHS tape. Whether it will also release the epic on DVD — or Divx, for that matter — is anybody's guess. But if it does, the movie's long running time will require either a two-sided or dual-layer disc. The dual-layer approach is preferable because the player automatically switches to the second layer, which is way better than having to turn the disc over. As for DTS, no one knows when any DVDs will come out with DTS encoding.

Despite being a quintessential "early adopter," I have resisted the urge to embrace DVD at this point because I don't believe it is the format that will take best advantage of digital TV (DTV), coming this November. DVD is a 525-line, interlaced NTSC format, and the obsolescence of that kind of video has been mandated by the year 2006.

Therefore, I was surprised to see Bob Ankosko recommending that everyone run out and buy a DVD player. How can you, and almost everyone else in the A/V press, endorse a product with such a short lifespan? It's like recommending that someone interested in a big-screen TV buy an NTSC set right now, instead of waiting a few months to get a DTV set! **Craig Gassmann**
Lancaster, PA

What you're forgetting is that if you want to be the first on the block with DTV, the price of admission is going to be \$6,000 to \$7,000 minimum. It will be years before prices reach mass-market levels. There's no doubt that the picture quality of high-definition TV (HDTV) programming will be spectacular, but only a couple of dozen stations will actually broadcast in the high-def format in the beginning. Furthermore, some networks have said they will broadcast multiple "standard-definition" programs instead of one or two high-definition programs.

So you can wait for a new high-definition DVD format to be developed, or you can go out today and buy a DVD player for less than \$500 that delivers superb 5.1-channel sound and picture quality that, while not as sensational as HDTV,

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—Jeff Cherun, *Home Theater Magazine*

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- Performance Audio; San Francisco* Replay Multimedia; Modesto*
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- CD- Soundtrack; Denver & Suburbs, Boulder, Ft. Collins,
- Colorado Springs.
- CT- Al Franklin's; Greenwich* Audio Etc.; Orange*
- Carstons Stereo/Video; Danbury* Roberts Audio Video; New
- London* The Sound Room; Westport* Stereo Shop; Hartford.
- DC & Washington Suburbs; Myer-Emco.
- DE- Sound Audio; Wilmington.
- FL- Absolute Sound; Winter Park* Audio Advice of NW Florida;
- Pensacola* Audio Advisors; West Palm Beach* Audio Center; Deerfield
- Beach* The Audiohouse; Vero Beach* Cooper for Stereo; Clearwater*
- Hoyt Stereo; Jacksonville* Palm Audio; Destin* Sound Components;
- Coal Gables* Sound Ideas; Gainesville* Sound Insights; Ft. Pierce*
- Sound Waves; Lakeland* Stereotypes; Daytona Beach.
- GA- Laser Disc Enterprises; Atlanta* Merril TV; Columbus*
- Stereo Connections; Valdosta* Stereo Festival; Atlanta.
- HI- Honolulu Home Theater; Honolulu.
- IA- Ultimate Electronics; Cedar Rapids, Des Moines*
- Archer Audio Video; Ft. Dodge* Audio Video Logic; Des Moines*
- Audio Visions; Sioux City* Hawkeye Audio; Iowa City, Cedar Falls*
- Reiner's; Dubuque.
- 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.
- 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- 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.
- MI- Contemporary Audio; Okemos* Pecar's (Detroit) Troy*
- Classical Jazz; Holland* Sound North; Iron Min.* Stereo Center
- FRAW; Flint* Court St. Listening Room; Saginaw.
- MN- Audio King; Minneapolis & Suburbs; Rochester, St. Cloud*
- Audio Designs; Winona.
- MO- Independence A/V; Independence* Sound Central; St. Louis.
- MS- Ideal Acoustics; Starkville* McLelland TV; Hattiesburg*
- Players A/V; Ridgeland.
- MT- Rocky Mt. Hi-Fi; Great Falls.
- NC- Audio Video Systems; Charlotte* Audio Visions; Wilmington*
- Now Audio Video; Durham, Greensboro, Raleigh, Winston Salem*
- Tri City Electronics; Conover.
- NE- Custom Electronics; Omaha, Lincoln.
- NH- Cookin'; Nashua, Manchester, Navington, Salem, S. Nashua.
- NJ- Camera and TV Store; Medford, Egg Harbor* Monmouth Stereo;
- Shawsbury* Woodbridge* Stereo; West Caldwell, Woodbridge.
- NM- Ultimate Elect.; Albuquerque* Sound Ideas; Albuquerque.
- NV- Ultimate Elect.; Las Vegas.
- NY- Audio Breakthroughs; Manhasset* Audio Dan; Lake Grove*
- Clark Music; Albany* Syracuse* Stereo Exchange; Manhattan*
- Hart Elect.; Vestal* Listening Room; Scarsdale* Rowe Camera;
- Rochester* Speaker Shop; Amherst.
- OH- Absolute Theater; Powell* Audio Craft; Akron, Cleveland,
- Marfield Hts. Westlake* Audio Etc.; Dayton* Classic Stereo; Lima-
- Ohio Valley Audio; Cincinnati* Paragon Sound; Toledo* Stereo Systems;
- Columbus* Threshold Audio; Heath* Unique Home System; Cincinnati.
- OK- Audio Dimensions; Oklahoma City* Photo Video; Stillwater,
- Shawnee* Ultimate Electronics; Tulsa.
- OR- Bradford's HiFi; Eugene* Kelly's Home Ctr.; Salem*
- Magnolia HiFi; (Portland) Beaverton, Clackamas* Stereo Plant; Bend.
- PA- Audio Junction; Pittsburgh* Audio Lab; Fairless Hills* Garry's Elect.;
- State College* GNT Stereo; Lancaster* Hart Elect.; Blakely*
- Hi-Fi House; Abington, Broomall, Camp Hill, Harrisburg*
- Listening Post; Pittsburgh* Palmer Audio; Allentown* Stereo
- Shoppes; Selinsgrove, Williamsport* Stereoland; Natrona Heights*
- The StereoShop; Greensburg.
- RI- Stereo Discount Ctr.; Providence.
- SC- 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 Stereo Systems; Abilene*
- Biorn's; San Antonio* High Fidelity; Austin* Krystal Clear; Dallas*
- Marvin Electronics; Ft. Worth* Sound Quest; El Paso* Sound Systems;
- Amarillo.
- UT- AudioWorks; Salt Lake City* Stokes Bros.; Logan* Ultimate Elect.;
- Layton, Murray, Orem, Salt Lake City.
- VA- Myer-Emco; Falls Church, Tyson's Corner, Fairfax* Audio Connection;
- Virginia Beach* Audiotronics; Roanoke* Home Media Store; Richmond.
- WA- Bunch-Finnegan TV; Kennewick* Magnolia HiFi; Seattle & Suburbs,
- Tacoma, Silverdale, Spokane* Pacific Sight & Sound; Wenatche.
- WI- Flanners A/V; Milwaukee* Hi-Fi Heaven; Appleton, Green Bay*
- Sound World; Wausau.
- Puerto Rico- Preciso on Audio; San Juan.
- 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.* Kebecon;
- Montreal- Bliton's; Newmarket, Ont.* Sound Decisions; Duncan,
- B.C.* Sound Gallery; Newfoundland* Sound Room; Vancouver*
- Stereoland; Windsor* Treble Clef; Ottawa.
- Mexico- Contact Grupo Volumen; Mexico City.

is substantially better than what most of us are used to.

Regarding Bob Ankosko's "Should You Go DVD?" in August, I recently made the plunge and am thrilled with the picture and sound quality of my DVDs. My question is, what will become of the DVDs I purchase today when Digital TV (DTV) has fully replaced analog? Will these DVDs be playable with good results on the DTV-compatible DVD players of the future, which I realize will have to use a completely new design in order to store the higher-resolution DTV images? Or will my collection be obsolete in a few years? **Dennis Tamburello Loudonville, NY**

It will be many, many years before DTV fully replaces analog TV. There's no reason a next-generation "high-definition DVD" format couldn't be compatible with present-day DVDs, but there's no way of predicting what manufacturers will ultimately decide to do.

The reason I won't be buying a DVD player anytime soon is easily stated: the dearth of material. There's essentially nothing on DVD except movies, and I'm not interested in watching movies. I won't consider buying a player until my favorite music videos, concerts, ballets, and operas are available on DVD. And it's no use your telling me about music on DVDs; Kenny Loggins and Mary Poppins aren't on my list.

In the meantime, if I want to see a movie, there's always videotape, laserdisc, or even (gasp!) a movie theater. And if I want to read about DVD players, I'll pick up a copy of *Video*. **Allen Watson III Sunnyvale, CA**

Just a quick reminder that every DVD player is also a CD player and that DVD is as much about audio (5.1-channel Dolby Digital surround sound is standard) as video. Try watching a movie or concert video with the sound turned off! As far as available software, we think that 1,300-plus (mostly movie) titles in a year and a half is pretty impressive — although more music-oriented titles would be nice.

The Sound of Tomorrow

I read the panel discussion "The Sound of Tomorrow" (August) with great skepticism. All of the representatives of companies that stand to benefit financially by a readily marketable change in technology try to make the case that higher sampling rates, longer digital word lengths, and multiple channels will move the consumer the same way the CD did. The CD was a quantum leap over the LP, and for many listeners the improvements — much better sound, much

less fragile discs, greater convenience — were well worth the cost of replacing entire collections. None of the proposed "replacements" provides a leap of that magnitude.

Rick Minor Greenwood, IN

I am concerned about the ludicrous excesses of some of the proposed new audio disc formats. Perhaps a modest increase in digital word length and sampling rate would be helpful, but some of the capabilities I've read about could be appreciated only by bats and dolphins. **Wayne Erling Miramar, FL**

If a new audio system that would make classical music sound even more wonderful requires an additional player, I can see buying one. However, if it is necessary to convert from stereo to multiple-channel amplifiers and buy three extra speakers to the tune of several thousand dollars, I could not make the switch for several years.

As far as combining it with DVD in a video format, I have no interest in that. I consider TV primarily a visual medium and couldn't care less about the sound effects of home theater. **Erik Hvilsted Portland, OR**

If you think home theater is only about delivering sound effects, then you really need to get off your couch and experience a good home-theater demo.

Archival Storage

Being interested in archival storage of historical recordings, I wonder if you can provide information (or speculation) about the possible differences in durability of recordings on CD-Rs and CD-RWs, perhaps in comparison to home recording on MDs or even prerecorded CDs. **Robert Beck Waverly, IA**

Technical Editor David Ranada replies: Since MD employs a "lossy" data-compression system, I don't think any serious archivist would want to use it unless the program material itself were of substandard quality. I haven't seen independent longevity data on CDs, CD-Rs, or CD-RWs, but I'd bet that when stored under suitable conditions (away from heat and corrosive atmospheres), all three types of CD will last several lifetimes. A much bigger problem for future archivists will be finding or maintaining playback equipment for ancient CDs.

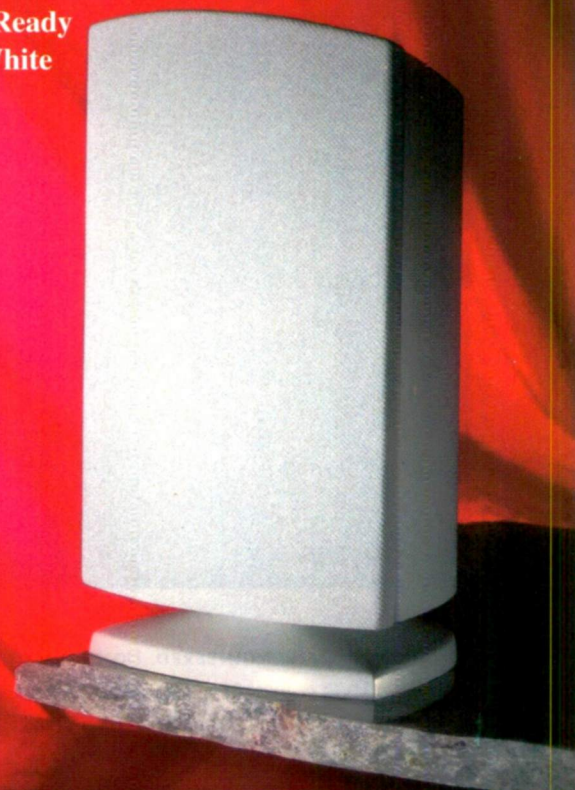
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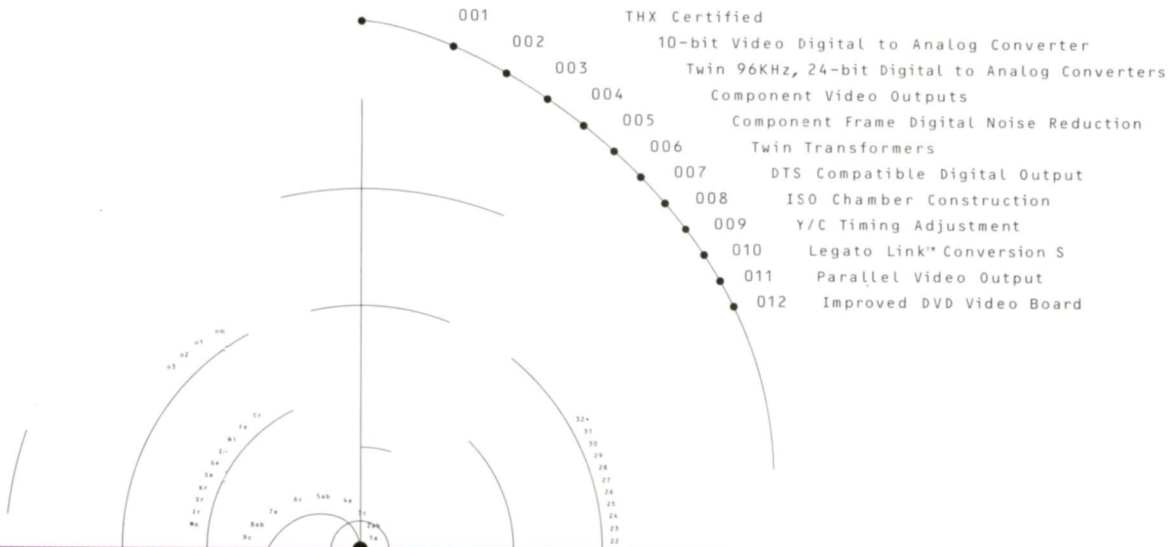
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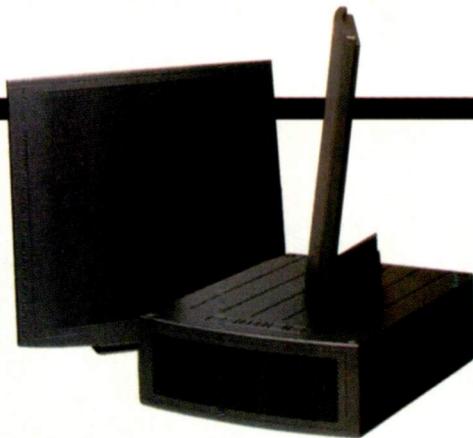
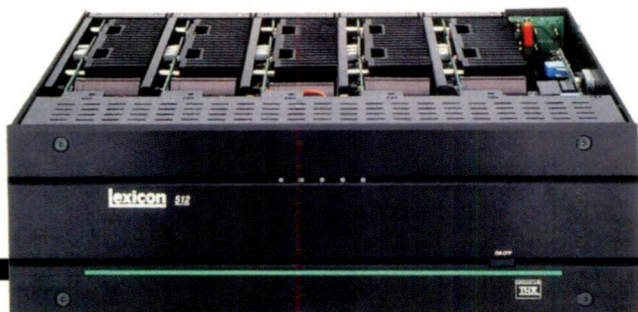
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Lexicon For home-theater enthusiasts who like it: loud and clear, Lexicon's NT-512 power amplifier houses five distinct amp modules on separate circuit boards, which also include individual low-noise transformers. Each is rated to deliver 120 watts into 8 ohms. The modular construction is said to make service easier and to reduce potential interference when playing multichannel recordings. The THX-certified NT-512 has unbalanced RCA and balanced XLR inputs and five-way binding-post outputs, all gold-plated. Weight is 65 pounds. Price: \$3,995. Lexicon, Dept. SR, 3 Oaks Park, Bedford, MA 01730; phone, 781-280-0300; Web, www.lexicon.com



Mission Thin is in: Mission's x-Space speaker system includes a pair of satellites that feature sister company NXT's patented flat-panel transducer technology. Each 8½ x 12-inch satellite is only ½ inch thick in the center, tapering to ¼ inch at the edges. The single-driver NXT design has a bandwidth rated from 200 Hz to 20 kHz. The system's bass module, which includes a 40-watt amplifier for the woofer and two 30-watt amps for the satellites, is also compact at 3⅞ x 10 x 14 inches. Both line- and speaker-level inputs are provided. Price: \$899. Mission, distributed by Demco, Dept. SR, 222 New Rd., Parsippany, NJ 07054; phone, 973-575-7810; Web, www.mission.co.uk



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Rush hour can be a breeze if you have a Mobile Reference car amplifier from AuraSound. The series includes the MR 275 (\$299), MR 2150 (\$399), MR 475Q (\$499), MR 4150Q (\$499), and MR 675H (shown, \$549). All five have a switchable bass boost (up to 8 dB at 55 Hz), gold-plated speaker and power connections, double-sided epoxy circuit boards, a modular internal design, and a high-efficiency heat sink. The top-of-the-line MR 675H is rated to deliver 50 watts x 6 or 150 watts x 3, both into 4 ohms. Five- and four-channel configurations are also possible. AuraSound, Dept. SR, 2335 Alaska Ave., El Segundo, CA 90245; phone, 800-909-2872; Web, www.aurasystems.com



Denon Dorm rooms and vacation homes can sound a lot better with the D-M7 minicomponent system, which includes a three-disc CD changer, an autoreverse cassette deck, and an AM/FM tuner. The cassette deck features Dolby B and C noise reduction and Dolby HX Pro headroom extension, while the tuner has 40 station presets and Radio Data System (RDS) capability. The D-M7's built-in amplifier is rated to deliver 30 watts per channel, and the supplied Mission 731i two-way speakers have 5¼-inch woofers and 1½-inch silk-dome tweeters. Price: \$999. Denon, Dept. SR, 222 New Rd., Parsippany, NJ 07054; phone, 973-575-7810; Web, www.denon.com

NOTE All prices and product information are supplied by the manufacturers. Dealer prices may vary.

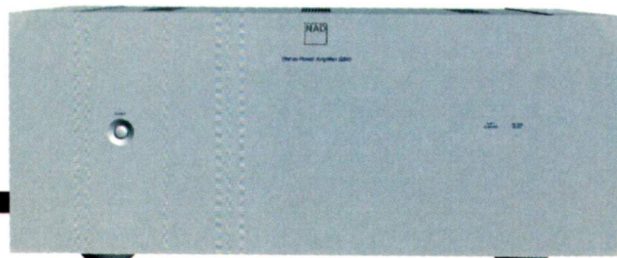


PSB A new Bronze Age is being ushered in by PBS with its Stratus Bronze speaker, a "two-and-a-half-way" design. One of its two 6½-inch woofers crosses over to the 1-inch aluminum-dome tweeter at 2 kHz, the other at 200 Hz. Its height is 36¾ inches, and it is finished in dark cherry or black ash vinyl. Price: \$1,099 each. PSB, Dept. SR, 633 Granite Ct., Pickering, Ontario L1W 3K1; phone, 800-263-4641; Web, www.psbSpeakers.com

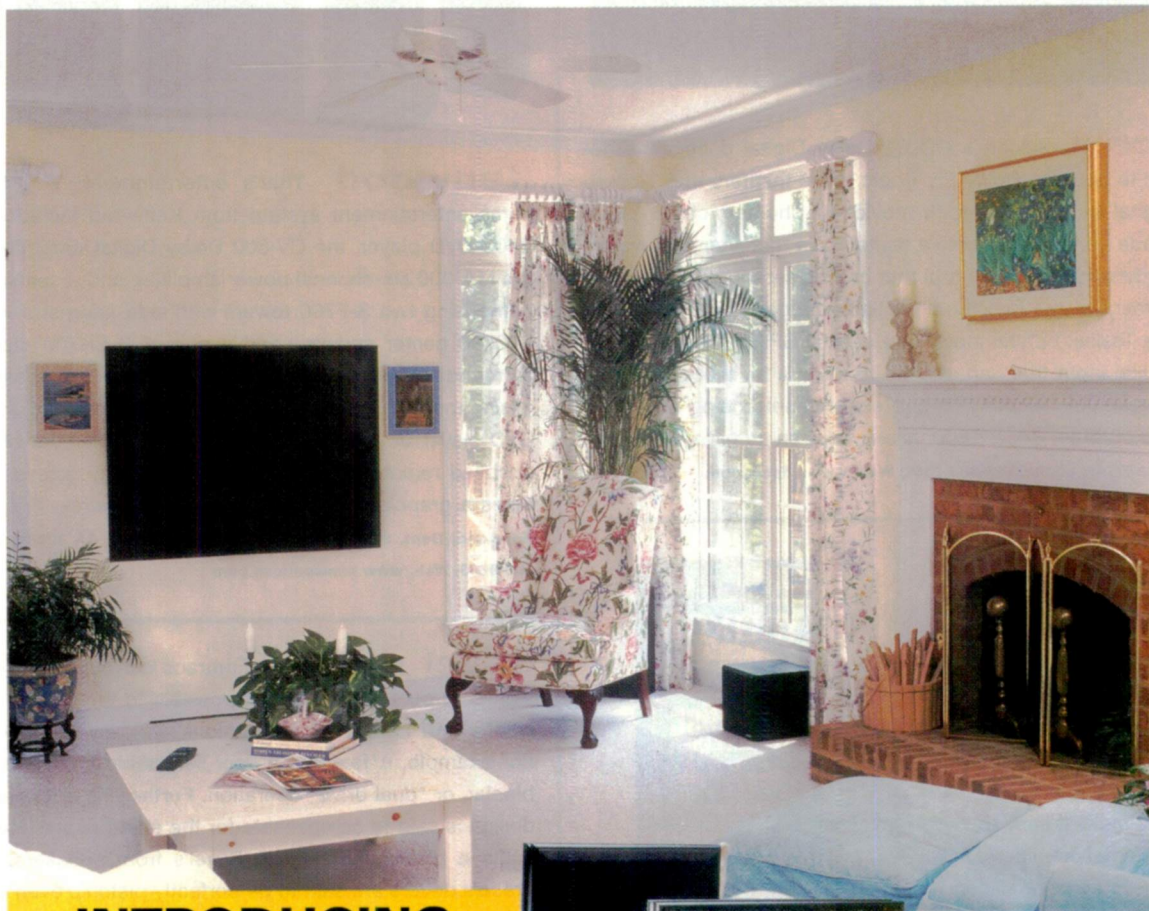
Godar Forget the rabbit ears and tin foil: Godar's Super Antenna Model II is designed to improve low-band reception for all TVs, VCRs, and FM tuners. In addition to local VHF and UHF signals, it is said to pull in FM stations from up to 120 miles away. The Model II is 52 inches long and just 1 inch thick for easy placement on top of big-screen TVs and home-theater wall units. Price: \$70 Godar Electronics, Dept. SR, 339 N. Gilbert Rd., Gilbert, AZ 85234; phone, 602-892-8207



NAD To mark its 25th anniversary, NAD has released the Silver Series of components, which includes the S200 stereo power amplifier. It's rated to deliver 225 watts per channel into 8 ohms, or 470 watts per channel into 4 ohms, and it can be bridged to a single-channel configuration that is said to be capable of delivering more than 1,000 watts into 4 ohms. Its finish is textured silver, and its unbalanced RCA and balanced XLR jacks are gold-plated. Price: \$1,799. NAD Electronics, Dept. SR, 6 Merchant St., Sharon, MA 02067; phone, 800-263-4641; Web, www.nacelectronics.com



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NEW PRODUCTS



Adcom Adcom's GDD-1 Dolby Digital decoder is designed to upgrade Dolby Pro Logic home theaters to 5.1-channel digital surround sound. It provides a phantom center-channel mode and features both a digital bass-management system and a dynamic-range control that can be set for 100, 75, 50, or 25 percent of the maximum available range. The GDD-1 contains a Toslink optical input, two coaxial SPDIF inputs, and an RF digital input that can also be used as a third coaxial input. For maximum flexibility, it has six-channel analog inputs as well as outputs. Price: \$800. Adcom, Dept. SR, 10 Timber Lane, Marlboro, NJ 07746; phone, 732-683-2356; Web, www.adcom.com

Jensen

Jensen's MCD9424 marine head unit promises to rock the boat. It has a CD section and an AM/FM tuner with 30 station presets and weather-band coverage. Two preamp outputs make it easy to add external amplifiers. A custom-fitted clear silicon cover allows for full operation of the front switches while maintaining a watertight seal around the unit. All chassis components are rustproof, and a special clear coating protects internal circuitry from high humidity. Price: \$399.

Jensen, Dept. SR, 2950 Lake Emma Rd., Lake Mary, FL 32746; phone, 800-223-6009; Web, www.jensenaudio.com



Maxell

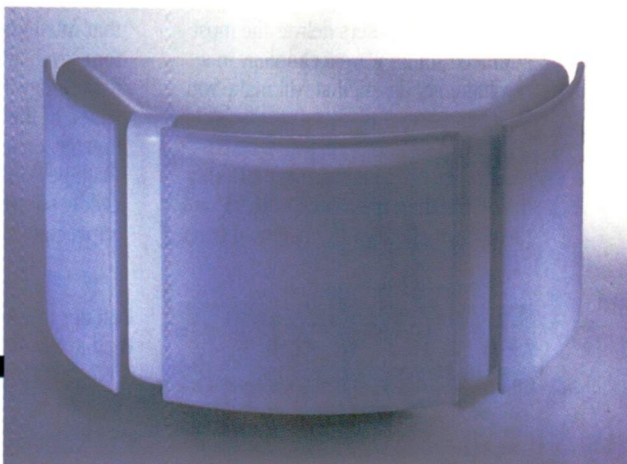
Practice proper aural hygiene with Maxell's MD-CL MiniDisc laser-lens cleaner, which uses voice instructions to lead you through speaker setup and a full system audio check. Insert the disc into the player like a normal MD, and its four brushes will remove dust and fiber particles that can degrade performance. Price: \$20.

Maxell, Dept. SR, 22-08 Route 208, Fair Lawn, NJ 07410, phone, 201-794-5900; Web, www.maxell.com



Kenwood That's entertainment! The SYS-2700 home-entertainment system from Kenwood includes the DV-S700 DVD player, the CV-500 Dolby Digital tuner/preamplifier, the MA-300 six-channel power amplifier, and a speaker system comprising two S-F700 towers with side-firing subwoofers, an S-C700 center speaker, and a pair of S-SR700 dipole tower surrounds. The tuner/preamp provides five digital signal processing modes, such as Arena, Jazz Club, and Stadium, and the DVD player uses 24-bit digital-to-analog (D/A) converters. The supplied remote control has a large display screen and combines a graphical user interface with a joystick. Price: \$2,700. Kenwood, Dept. SF, P.O. Box 22745, Long Beach, CA 90801; phone, 800-536-9663; Web, www.kenwoodusa.com

Revel Revel's Ultima Embrace surround speaker is designed to be as adaptable as possible to the various room positions and acoustical interactions typically found in homes. For example, it features a user-selectable control for dipolar, bipolar, or "dual drive" operation. Further, its timbre-correcting design is said to compensate for the effect of wall mounting to make a proper match with Revel's front speakers. The Embrace's drivers are said to be perfectly piston-like even during the most demanding musical passages thanks to their large voice coils (ranging from 1 to 2 inches) and crossover networks with slopes of 24 dB per octave. The Embrace measures 23¾ x 11¾ x 9½ inches and is available painted in white, matte black, or high-gloss colors. Price: \$5,000 a pair. Revel, Dept. SR, 19748 Dearborn St., Chatsworth, CA, 91311; phone, 818-717-0770; Web, www.revelspeakers.com





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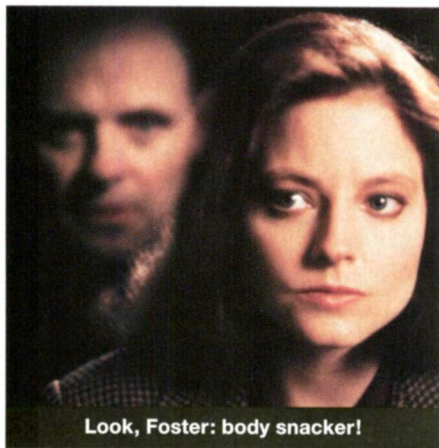


Hot DVDs

RECOMMENDED NEW TITLES AND CLASSIC REISSUES BY RAD BENNETT

THE SILENCE OF THE LAMBS

Just in time for Halloween comes the psychopathic, cannibalistic terror of the Best Picture of 1991, which also won honors for Best Actor Anthony Hopkins and Best Actress Jodie Foster (shown) as well as Best Director Jonathan Demme. But what may truly scare you into bolting your door on October 31 is the DVD's *Voices of Death* supplement, which reproduces the printed remarks of real serial killers, whose comments on life, sex, murder, and death are nasty, horrifying, and without remorse. As for *The Silence of the Lambs* itself, other video editions (including Criterion's own deluxe laserdisc set) have looked good, but



CRITERION

Look, Foster: body snacker!

the DVD triumphs with crystal-clear, properly contrasted images and full-bodied two-channel matrix surround sound. Although there are no subtitles or dubbed languages, you do get many extras besides *Voices of Death*, including deleted scenes, a comparison between storyboards and the finished film, and screen-specific commentary by Hopkins, Foster, Demme, screenwriter Ted Tally, and FBI agent John Douglas.

One-sided dual-layer; Dolby Digital two-channel matrix surround; letterbox (1.85:1); 118 min (feature). Criterion, \$39.98.

PSYCHO

The granddaddy of all modern movies about psychopaths, Alfred Hitchcock's 1960 masterpiece confounded the censors and truly shocked moviegoers used to such

previous Hitchcock fare as *To Catch a Thief*, *Vertigo*, and *North by Northwest*. The gruesome stabbing in the shower scene was implied so graphically that people who saw it swore that the blood was red. But *Psycho* is thoroughly black-and-white, and this DVD is so precise in its proper letterbox edition that you can step through each and every frame to prove that the knife never enters the double's body. A long (if somewhat padded) documentary includes comments by actress Janet Leigh, Hitchcock's daughter, and, most important, screenwriter Joseph Stefano. There are also still frames galore and Hitchcock's wry trailer in which he gives a tour of the Bates Motel.

One-sided dual-layer; English and French, Dolby Digital two-channel mono; closed-captioned; English and Spanish subtitles; letterbox (1.85:1); 109 min (feature). Universal Home Video, \$34.98.

INVASION OF THE BODY SNATCHERS (1956 and 1978)

Don Siegel's 1956 classic, with Kevin McCarthy and Dana Wynter (shown) trying to outwit and outrun aliens who take over human identity by assimilation, remains one of the scariest movies ever made. Philip Kaufman's 1978 version, starring Donald Sutherland, Leonard Nimoy, and Jeff Goldblum, is more intellectual but highly successful nevertheless, featuring plenty of frightening moments and some great special effects. Siegel's 2:1 SuperScope picture has been cropped a bit on DVD (coming in on my monitor at 1.9:1), but it's a lot more authentic than the 2.35:1 claimed as "original" by Republic on the DVD packaging. The black-and-white visuals are generally crisp but have occasional traces of graininess and a few digital artifacts. The transfer of Kaufman's film, on the other hand, could scarcely be better, offering rich color, eye-popping detail, and two-channel matrix surround sound that faithfully conveys the singularly eerie score. Accordingly, Kaufman's film is the hotter DVD, although Siegel's original is the better movie by a pod.

1956: Two-sided; English, Spanish, and Italian, Dolby Digital two-channel mono; closed-captioned; English, French, and Spanish subtitles; letterbox (approx. 2:1) and pan-and-scan; 80 min (feature). Republic, \$24.99.



REPUBLIC

Run faster! Body Snatchers!

1978: Two-sided; English, Dolby Digital two-channel matrix surround; French, Dolby Digital mono; closed-captioned; English, French, and Spanish subtitles; letterbox (1.85:1) and pan-and-scan; 117 min (feature). MGM Home Entertainment, \$24.98.

STARSHIP TROOPERS

Earth versus giant, scary, intelligent bugs: a dazzling special-effects show or a condemnation of war, the military, and violence, with overt references to Nazis and brainwashed "Hitler youth"? Director Paul Verhoeven and screenwriter Ed Neumeier make it clear in this DVD's commentary track that the latter interpretation is accurate and that *Starship Troopers* is anti-Fascist rather than neo- or pro-Fascist. Which ever way you see it, you'll be blown away by the DVD transfer. Even to jaded eyes, the effects are downright amazing, aided here by the razor-sharp DVD image. The Dolby Digital 5.1-channel mix is entirely complementary to the picture, with dynamics that will really put your home theater to the test. In addition to the commentary, you get screen tests, behind-the-scenes footage, deleted scenes, and more.

Two-sided; English, Dolby Digital 5.1; English and French, Dolby Digital two-channel matrix surround; closed-captioned; English, French, and Spanish subtitles; letterbox (1.85:1); 130 min (feature). Columbia TriStar Home Video, \$29.98.

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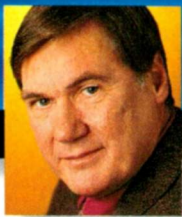
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AUDIO Q&A

IAN G. MASTERS

Recording in a Pinch

Q. I use my portable MiniDisc recorder to capture live performances. At a recent event, I found I'd forgotten to bring my microphone. In a pinch, a friend suggested I insert the plug for my headphones into the microphone input. I thought it was crazy, but I did it, and I really couldn't tell the difference in sound between a recording using my headphones and one made with my \$250 mike. How can that be? **Kevin Lloyd Jamaica, NY**

A. Details aside, there's no fundamental difference between a dynamic microphone and a headphone. Both consist of a diaphragm attached to a coil of wire that can move back and forth in a magnetic field. Like all electric motors, both can either turn electricity into motion, creating sound, or use externally applied motion to generate electricity. It works with speakers, too, which is why most wireless intercoms use the same transducer whether you're talking or listening. You could plug your

mike into the headphone output and listen to sound as well (as long as you're absolutely sure it's a dynamic microphone; other types might be damaged).

But although it's not surprising that you were able to record something, it is surprising that it was a good recording. Microphone designers go to a lot of trouble to get the diaphragm, coil, and enclosure just right for flat-response recording. Headphones have a whole different set of requirements; if it happened to work in your case, that's probably a fluke. And I'm very surprised you weren't plagued by hum. Microphones use shielded cables to prevent hum, but headphones rarely do.

Karaoke Woes

Q. I enjoy singing to karaoke tapes and recording the result. My problem is that many of the tapes are not recorded in my key, and while my recorder has a pitch control that lets me slow down the tape slightly, which does lower the pitch, the

sound becomes too draggy. I've heard that there are electronic devices that let you change the pitch of a recording without slowing it down. Do they really exist?

Fred Ramondetta Holyoke, MA

A. Yes, but they may not be practical for you. Recording studios have gear that will do what you want, but you'd have to shell out megabucks for it. Some audio recording programs for computers do this as well, but you'd have to set yourself up for PC recording, dub your source tapes to the computer, adjust them, and dub them back to cassette while you sing along. That might not be worth the effort.

At least a couple top-of-the-line karaoke laserdisc players, like the Pioneer CLD-V870 and CLD-V760, let you alter pitch without changing tempo, but you would have to invest in both the machine and a library of special laserdiscs — a costly proposition. The JVC XU-301 (see test report on page 33) is a combination CD

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— Walt Whitman

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changer and MiniDisc recorder that seems designed for karaoke — there's a pitch control and a microphone input — but again you'd have to replace your tapes, this time with karaoke CDs.

The only consumer tape machine I've encountered that would do what you want — although with what sort of fidelity I'm not sure — is a cassette deck that Lexicon sold in the early 1970s called the Vari-speech II. It let you increase the speed of a tape up to 250 percent (or cut it by 50 percent) without affecting pitch; it also let you alter pitch without changing speed. Because it was mainly meant for talking books (people can comprehend speech at much faster rates than most people talk), I'm not sure how it would handle music. But if you ever run across one in a secondhand shop, it might be worth finding out.

Cable Stereo

Q. *The audio outputs of my cable-TV box yield almost mono sound, but I find I can get great stereo separation if I take the audio from my VCR's tuner. Is there an alternative connection I can use so that I don't have to keep my VCR running whenever I watch television?*

George Nussbaum
Casselberry, FL

A. It works, so why mess with it? The ability of cable equipment to extract decent audio quality varies widely, but your VCR is obviously doing fine, so I'd suggest you just keep doing what you're doing. Lots of people use the tuner in a VCR for all their viewing, and it rarely causes a problem.

If it concerns you, however, there may be an alternative, depending on what features your TV set offers. If it's a stereo (MTS) set with audio line outputs, you might try feeding your audio system from those. That way, the TV's tuner would do the stereo decoding, rather than the cable box. But before you wire this up permanently, give it a trial run to see if the sound is as good as you are now getting through your VCR. Most video machines have decent stereo decoders, but not all televisions and cable boxes do.

If you have a question about audio, write to Q&A, Stereo Review, 1633 Broadway, New York, NY 10019; e-mail, StereoEdit@aol.com. Sorry, only questions chosen for publication can be answered.

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Comparing DVD Players

LIKE AUDIOPHILES, videophiles appreciate comparative testing. That has been the core of my work here recently on three DVD players (see "Triple Play," page 68). In my viewing comparisons, my main concerns have been insuring fairness and maximizing the visible differences among the players. You might like to know how I reached the conclusions in my report.

The basic criterion for fairness is simple — match everything in the signal paths from each player's output all the way to the TV. Doing so poses several requirements, ranging from the trivially easy to the costly or impractical at home.

- ▶ Compare only two players at a time. Multiple comparisons get complicated, confusing, and costly.

- ▶ Set up both players for identical output. For example, if either has an "expanded black level" setting, turn it off or back to normal. Set any player video controls (contrast, etc.) to neutral.

- ▶ Compare only identical outputs (composite-video with composite-video, S-video with S-video, component-video with component-video). If possible, use S-video outputs or better, as the deficiencies of composite-video signals can mask differences in player performance.

- ▶ Connect each player's output to an identical input, whether it be an A/V input of an amplifier or receiver or, better still, the input of a video monitor. If the monitor has only one external-video input, do the switching elsewhere, such as in the A/V amp/receiver. Don't pull the common trick of using one player, then unplugging it and plugging in the other. Also, don't send one player's signal through your A/V system and the other's directly to the monitor. Never send a DVD signal through a VCR during testing.

- ▶ Use identical cables of the same length. Mismatched cable lengths can create slight differences in the images, as can grossly mismatched cable impedance characteristics.

- ▶ Synchronize playback between the players using two copies of the same DVD. (This is where things can start getting costly.) The match should be as close as possible, preferably to the nearest frame ($1/30$ of a second). A disc's image quality can change rapidly, and even slight asyn-

chrony can give the impression that a player is misbehaving. Do not alternate a single disc between players.

- ▶ To minimize any visible gaps when changing players, the switching between them *must* be instantaneous. Video as well as audio comparisons are most sensitive when the switching is rapid. You can get around this switching requirement by using two *identical* video monitors, each set up to produce identical images. But a perfect matched-monitor setup is difficult to achieve even with video test signals and instruments.

- ▶ Try to avoid any picture rolling or blanking when switching between players. This creates enough visual confusion to significantly reduce your sensitivity to differences. I use a semiprofessional video switcher/mixer (Panasonic's WJ-AVE55) to do the switching. It contains a

The basic criterion for fairness is simple — match everything from each player's output all the way to the TV monitor.

time-base corrector circuit that exactly synchronizes the waveforms on each of its inputs, preventing rolling or blanking. It also enables, among other things, a split-screen display, the most sensitive video comparison of all. Any differences in player performance are instantly visible along the dividing line. However, although it is a generally fine and extremely useful device, the WJ-AVE55 does produce some subtle video degradations that must be allowed for in any comparisons. Doing substantially better would cost much, much more.

Having gotten this far, it almost goes without saying that the monitor used for comparison must be of high quality, with enough horizontal luminance resolution to display the theoretical performance limit of a DVD player (540 lines). Using a test DVD like Swellstone's *Video Essentials* (www.videoessentials.com), its video controls (brightness, contrast, color, tint) should be set to approach the performance of a professional video monitor.

Why such extreme measures as split-screen playback? Because the visible differences among nearly all DVD players in any price category range from the very subtle to the nonexistent *with normal program material played at normal speed*. (I wish the same could be said about the differences in feature sets and ease of operation.) With frame- and waveform-synchronized split-screen viewing of test patterns there are times when I can't see where one player leaves off and the other begins. With test patterns, I do sometimes see the same slight differences in resolution that show up in our video frequency-response measurements. But these are hard to see with movies because very little program material having such fine detail also stays still long enough for a couple of back-and-forth switches and a judgment call. The eye's own resolution capabilities decrease dramatically as an image moves. That's why there are static test patterns.

Sometimes I see slight differences in black level (contrast) or white level

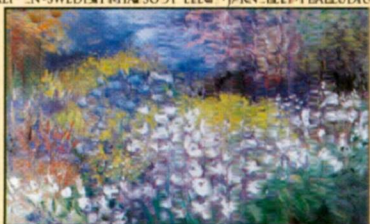
(brightness), but usually only in frame-synchronized or split-screen comparisons. The typical picture roll you get without using time-base-corrected switching is enough to completely throw the eye off such subtle differences. Small variations in color performance have also been barely visible in split-screen comparisons. All have been so tiny that without access to the DVD's original master, it's difficult to tell which player is more accurate.

Nearly all of the *visible* DVD player differences I've found are too small to give me confidence in labeling them the results of a design decision. Normal production variations could easily change the nature of the differences with the next units off the production lines. Unless a player is truly deficient in one or more areas — and we have mentioned these in our test reports — you can expect to get at least 98 percent of what the filmmaker intended you to see with almost any DVD player on the market. Not bad considering the youth of the medium. □

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Work in Progress

THE COMPACT DISC has been the high-fidelity leader for 14 years. It provides excellent fidelity, and early critics, who focused their meanest venom on the new format, have been forced to admit that the principal limitation of the CD is not the format but the reproducing hardware — primarily the digital-to-analog (D/A) converters. As the converters improved, so did “CD sound quality.” Today, the antidigital paranoia has subsided as the binary revolution has reinvented virtually all aspects of the entertainment industry for the 21st century.

However, just as the CD reached its zenith, and the very phrase “CD quality” became the audio gold standard, the CD’s doom was made manifest in the DVD-Video disc. It is ironic, and a little sad, that a disc designed to set a new consumer digital video standard would also, as a casual byproduct, set a new digital audio standard. Nevertheless, DVD-Video’s ability to encode audio with specifications reaching up to a 96-kHz sampling rate and a 24-bit digital word length made it superior to the CD. Videophiles everywhere gloated that their DVDs could sound better than the best CDs.

As in any good drama, though, the audio world was secretly preparing its revenge. The DVD-Audio format will decisively regain audio supremacy and insure that the best sound quality belongs to an audio disc. The documents that define the DVD-Audio format are nearing completion, and normally that would signal a race to the marketplace. But the recording industry is gravely concerned about copy protection, and its desire to encrypt the DVD-Audio bitstream (as the video bitstream of DVD-Video is already encrypted) will push the product launch into the future. Nevertheless, most of the details about DVD-Audio are now available, and audiophiles are filled with anticipation.

Anyone who was ever bothered by CD sound quality will be pleased to hear that DVD-Audio allows coding at 192 kHz and 24 bits, providing a high-frequency response limit of 96 kHz and a -144-dB noise floor. Those are theoretical limits, because we lack the technology to build speakers that are flat out to that frequency or electronics that are so quiet. However, most DVD-Audio discs will not use those

coding parameters. The format allows six different sampling rates (from 44.1 to 192 kHz) and three word lengths (16, 20, and 24 bits). In this way, content providers can tailor the specifications to the application. A DVD-Audio disc can contain from one to six channels in a variety of permutations. Such attributes as sampling frequency, word length, and channel assignment can differ for each track. Moreover, tracks can be encoded in more than one way; for example, one song might have both a PCM multichannel mix and a Dolby Digital mix. Because of a bit-rate limit of 9.6 million bits per second (Mbps), tracks encoded at the highest sampling frequency and longest word length will be two-channel stereo.

For many applications, multichannel playback is not feasible. For example, portable playback through headphones

Just as the CD reached its zenith, and “CD quality” became the audio gold standard, the CD’s doom was made manifest.

dictates stereo. The DVD-Audio specification thus contains a provision for down-mixing multichannel audio to two-channel stereo. Each track can have 16 *coefficient tables* specifying the absolute phase, relative gain (from 0 to -60 dB), and pan position of each channel. The player reads that information and then mixes the multiple channels down to two. Because the coefficient tables are encoded by the content provider, the mix can be artist-approved. A benefit of this approach is that disc space doesn’t have to be wasted on a redundant stereo mix. Other DVD-Audio options include a dynamic-range-compression control, pre-emphasis (as in the CD format), and the ability to use alternative coding methods such as lossless coding, 1-bit coding, and Dolby Digital.

There are two kinds of DVD-Audio discs. Audio-only discs mainly emphasize audio content, but they can also contain one still picture per track, text information, and a visual menu. The Audio with Video (A&V) discs contain DVD-Video

material like concert footage. There will be some confusion as to which player plays which disc because there will be three types of DVD players. DVD-V (video) players will play DVD-Video discs, the video contents of A&V DVD-Audio discs, and yet another type of disc called Video Audio Navigation (VAN) featuring extra content and on-screen navigation aids. DVD-A (audio) players will have audio capability only. DVD-U (universal) players will have full audio and video capability and will play all DVD-Audio and DVD-Video discs. Unfortunately, as the standard is currently written, today’s DVD-Video players will not play any DVD-Audio discs. (A Dolby Digital track may be included for compatibility.)

These player/disc confusions will be trivial compared with the chaos created by the Sony/Philips Super Audio Compact Disc, a variant of DVD-Audio that uses 1-bit Direct Stream Digital (DSD) coding and places a redundant Red Book CD layer on the disc. Although I greatly respect Sony and Philips (among other reasons,

for the invention of the CD), and I understand their argument that this layer will make Super Audio discs playable on existing CD players, it seems to me that the real reason for their proposal is to make money off their 1-bit and CD patents. I can’t argue with their profit motive, but I’m not sold on the need for DSD coding, and it would be a tragedy to saddle this awesome new format with an old-fashioned Red Book layer. If Sony and Philips had played this patent game when they invented the CD, would we have wound up with a CD encoded with ATRAC (the coding system used for the MiniDisc format) and an LP layer on one side?

Just as the CD annihilated the vinyl LP, and DVD-Video annihilated the laserdisc, DVD-Audio is destined to annihilate the CD. It will legitimize home theater and multichannel music as the wave of the future of high fidelity, and it will render Red Book stereo obsolete. Let’s shed a tear for the CD, and then warmly embrace its worthy successor. □

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JVC XU-301 CD Changer/ MiniDisc Recorder

KEN C. POHLMANN

Because of the high price of CDs and perhaps a bit looser attitude toward copyright issues, CD-to-MD dubbing machines are quite popular in Japan. To introduce Americans to the copying conveniences provided by such components, JVC has brought over the unique XU-301, which combines a three-disc CD changer and an MD recorder in one standard-size chassis. Some of its features are decidedly Japanese, but others will appeal to anyone who wants to make compilation MDs.

The first glance tells you that this is a formidable machine. Its front panel positively bristles with controls — some 38 in all! — including an unusual jog dial for track search/skip and other functions. But its most interesting feature is one you can't see: the internal digital connection between the CD section's output and the MD recorder, which makes CD-to-MD dubbing a cinch. No more stringing cables from one component to another. With this baby, you simply pop a CD in one side and an MD in the other, and hit the record button.

A complete inventory of every one of the XU-301's controls would take far too much space, so here's a quick overview. There are two small mode buttons, labeled CD and MD, that allow one set of transport controls (play/pause, stop, and search/skip) to do dou-

ble-duty. Each of the three CD disc drawers operates autonomously, with its own select and eject buttons. As with most CD changers, you can program the discs to play sequentially. An unusual feature is a pair of buttons that let you change the playback pitch of any CD up to ± 12 percent; another button returns it to normal pitch.

A titling feature lets you input album and artist names, or whatever other information you want, for up to 200 CDs. The titles are stored in memory and automatically recalled whenever the discs are loaded. Conveniently, when you make a CD-to-MD dub, the titles are automatically transferred to the MD. A timer/clock button lets you program CD playback and recording sessions on a one-time or daily basis. Interestingly, there's a disc-lock feature, presumably to prevent kids from putting in or removing CDs. I guess that could be useful if you don't want them listening to "adult" CDs.

The MiniDisc part of the XU-301 has only one slot. MD playback shares all of the CD section's functions, including track titling, plus all sorts of editing perks such as erasing, joining, moving, or dividing tracks. You can even program playback sequences that intermix tracks from an MD with those from any of the loaded CDs.

Of course, the XU-301's real attraction is recording. Four buttons allow you to select the source: either the CD section, the optical digital input, the analog line input, or the microphone in-

FAST FACTS

KEY FEATURES

- One-touch CD-to-MD dubbing
- Can intermix tracks from three CDs and one MD for playback
- Can mix CD output, line input, and microphone input for recording to MD
- Three independent CD drawers
- Optical digital input and output
- Titles for CDs and MDs can be input with keyboard on remote or jog dial

DIMENSIONS 17 $\frac{1}{4}$ inches wide, 5 inches high, 12 $\frac{1}{2}$ inches deep

PRICE \$550

WEIGHT 13 $\frac{1}{4}$ pounds

MANUFACTURER JVC, Dept. SR, 41 Slater Dr., Elmwood Park, NJ 07407; phone, 800-252-5722; Web, www.jvc.com

HIGH POINTS

Easy, convenient playback and recording.

Capable of mixing CD and MD playback.
Outstanding CD defect tracking.

LOW POINT

Slow CD loading and track access.

put. A sampling-rate converter changes incoming 32- or 48-kHz digital signals to 44.1 kHz for recording. In addition, the CD, line, and mic inputs can be mixed to create CD+line, CD+mic, or line+mic signals; you can even adjust the relative balance of the sources.

Some of the XU-301's features may seem strange to Americans. For example, why would you need to change CD pitch or mix a microphone signal into a dub of a CD? The reason, of course, is karaoke, that great Japanese sing-along tradition that has only modestly infiltrated our own national psyche. Clearly, the XU-301 is a karaokeer's delight, although most Americans will probably overlook those features and focus more on its playback and copying functions.

There are three modes of so-called CD-synchro recording: 1) one-button CD-to-MD recording, 2) First Track, which records only the first track on each of the three CDs in the changer, and 3) Listening Edit, which records a programmed track sequence. The signal is conveyed digitally in direct CD-to-MD recordings made at normal pitch, but when you change the CD pitch, or mix line or mic signals with a CD, the connection is analog. Recording level is set automatically during digital recording, and there's a record-level knob for use with analog signals. CD track numbers are automatically transferred to MD when you're recording digitally. They must be entered manually during analog recording unless you select the mode that senses silences between tracks and enters track numbers at those points (this may not be foolproof with some recordings).

In addition to 1/4-inch jacks for a microphone and headphones, the front panel has a large blue-fluorescent display, which provides a complete visual summary of what's happening. When the XU-301 is powered down, the time is displayed (thanks, JVC, but I don't need another clock in my house).

The remote control's 45 visible buttons duplicate most of the front-panel controls and add a few miscellaneous

features like track and disc repeat. Flip up the handset's lid, and you see a set of 70 alphanumeric and function buttons for editing, which you have to hold the remote sideways to use. A sensor detects the lid position and changes the functions of buttons "shared" with the regular controls on top of the lid. With the lid open, many of the buttons form a tiny keyboard for entering CD and MD titles. This is actually pretty nifty, and the remote emits infrared beams from both the top and side. Cool.

The XU-301's rear panel has optical connectors for digital input and output, RCA jacks for stereo analog line in/out. In addition, there are pin connectors for connecting it to JVC's Text Compu and Compu Link integrated system controls and switches for assigning master/slave status and display mode. These connections are mainly useful for displaying MD and CD text on a TV screen (via a properly equipped JVC receiver) or when synchro recording from an external source.

The XU-301 fared well on the test bench. Measurements showed that its CD playback was on par with that of other, similar-price CD players, and well within the tight circle that defines contemporary CD performance. One notable exception was the outstanding defect tracking. The changer had no trouble handling the largest defect on the Pierre Verany test disc. As CD collections age, this will be appreciated.

MiniDisc playback was also quite good, as was MD recording. The only notable weakness was a relatively high noise floor on the analog line-level input. Of course, the numbers do not fully illuminate the quality of the current version of the MD format's ATRAC data-reduction algorithm, which is what makes it possible to get 74 minutes of music on the tiny, 2 1/2-inch disc. The ear is the best arbiter for that.

I started the hands-on part of my evaluation with the Romantic sounds of Wagner. I listened to a variety of CDs, including Gerard Schwarz's third col-

IN THE LAB

RECORD/PLAYBACK PERFORMANCE, DIGITAL INPUT

Unless otherwise noted, all input signals were from the built-in CD player using the internal connections. All were dithered and at 44.1-kHz sampling rate with 16-bit data. All measurements taken at the recorder's analog output.

Frequency response

20 Hz to 20 kHz +0.35 dB, -0.10 dB

Noise (A-wtd, re -20 dBFS*)71.5 dB

Distortion (THD+N, 1 kHz)

at 0 dBFS0.026%

at -20 dBFS.....0.26%

Linearity error (at -90 dBFS)-0.2 dB

Excess noise (without/with signal)

16-bit (EN 16)+2.3/+2.4 dB

quasi-20-bit (EN 20)+18.7/+19.3 dB

RECORD/PLAYBACK PERFORMANCE, ANALOG INPUT

All input signals were from an external source, and all measurements were taken at the recorder's analog output.

Sensitivity (with record volume full up)

0 dBFS* obtained with a 1.1-volt input

Frequency response

20 Hz to 20 kHz +0.30, -0.50 dB

Noise (A-wtd, re -20 dBFS).....59.3 dB

Distortion (1 kHz, THD+N)

at 0 dBFS0.03%

at -20 dBFS.....0.29%

Linearity error (at -90 dBFS)+2.4 dB

* decibels referred to digital full-scale

CD PLAYBACK PERFORMANCE

Except for defect tracking, all tests used dithered, two-channel stereo signals from *Stereo Review's* test CD-R. Dithering limits measured performance for noise level and distortion. Measurements made at the analog output.

Maximum output.....2.2 volts

Frequency response

20 Hz to 20 kHz +0, -0.5 dB

Noise (A-wtd, re -20 dBFS*)71.4 dB

Excess noise (without/with signal)

16-bit (EN 16)+1.8/+2.5 dB

quasi-20-bit (EN 20)+18.3/+18.2 dB

Distortion (THD+N, 1 kHz)

at 0 dBFS0.026%

at -20 dBFS.....0.25%

Linearity error (at -90 dBFS)-1.6 dB

Defect tracking

(Pierre Verany test disc).....4,000 µm

MD PLAYBACK PERFORMANCE

Test signals, from Sony's TGYS1 test MD, were undithered and produce anomalous results for noise, distortion, and linearity. Measurements made at the analog output.

Maximum output level2.13 volts

Frequency response

20 Hz to 20 kHz +0.35 dB, -0.10 dB

Noise (A-wtd, re -20 dBFS*)73.6 dB

Distortion (THD+N, 1 kHz)

at 0 dBFS0.026%

at -20 dBFS.....0.25%

Linearity error (at -90 dBFS)-2.1 dB

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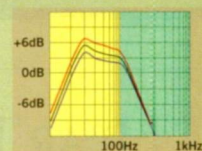
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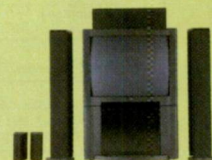
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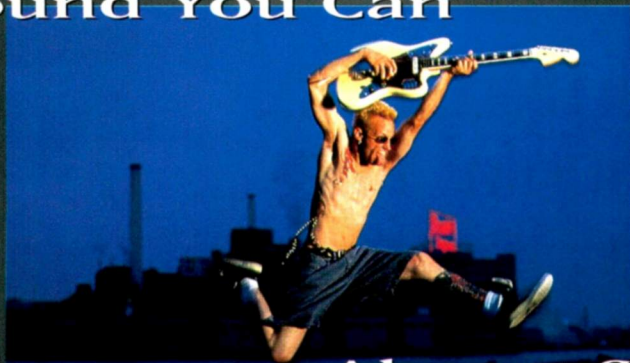
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lection of excerpts from the operas with the Seattle Symphony, *Wagner3* (Delos DE 3120), soprano scenes with Jessye Norman (London 49759), and conductor Lorin Maazel's *Tannhäuser Without Words* (Sony 47178). Although three disc drawers are not enough to load most complete Wagner operas, they did provide about 4 hours of nonstop music. Like nearly all contemporary CD players, the XU-301's CD section delivered the goods with minimal degradation. Even when I listened intently, I was unable to detect any significant faults.

I also spent a little time running through the various CD features. The player supports the CD-Text format. When I popped in Aerosmith's *Nine Lives* (Columbia), for example, the album name and track titles appeared in the display. Conveniently, you can use the jog wheel to scroll through song titles and hit the play button when you find the one you're looking for. The process of loading and unloading CDs and accessing tracks was slower than with most stand-alone players and changers I've used.

Switching to MD playback, I auditioned other contemporary music on prerecorded MDs, Bonnie Raitt's *Nick of Time* (Capitol) and Eric Clapton's *Unplugged* (Reprise). Overall, I appreciated the sonic quality of the MD playback. The ATRAC coding system has improved steadily over the years (I have a demo recording using a pre-production version of ATRAC that is spine-tinglingly bad). Still, at similar bit rates, ATRAC is not always as transparent as other perceptual coders, such as MPEG Layer III, and it could even be argued that Dolby Digital (AC-3) generates fewer artifacts. In particular, there was some coloration in the highs, around 12 kHz, and the extreme high end (above 16 kHz) sometimes disappeared in complex musical passages, which momentarily drain the bit pool. For most listeners, these anomalies would be apparent only under critical listening comparisons with an uncompressed music source. The bottom line: The JVC XU-301's MD sound quality was certainly comparable to that of other MD players and only a notch or two below that of CD.

Next I turned my attention to the buttons with the red "record" labels. As a copyright holder myself, for my books and other writing, I am quite sensitive about observing copyright law. This recorder complies with the Audio Home

Recording Act and encodes digitally transmitted data with the Serial Copy Management System (SCMS) flag. While it is legal to make a digital copy for personal use, SCMS will prevent a subsequent digital copy of the copy.

To put the XU-301 to the test, I made a variety of MD recordings from the digital input, the analog input, the CD section, and even the microphone input. Provided you haven't engaged the disc lock, dubbing a CD from the built-in player is literally child's play: load the CD and a blank MiniDisc, and press the CD Rec button. That's all you have to do to make a basic recording. More selective recording jobs are almost as easy. In the Listening Edit mode, you build your own play list by simply hitting either the Listening Edit or Skip button as a CD track plays; the XU-301 calculates how much time your selections will leave on the MD. Recording starts automatically once the MD's time limit or a total of 32 tracks is reached. As you might expect, MD recordings from CD sounded quite good. Minor ATRAC artifacts intruded slightly, but my home recordings sounded every bit as good as the prerecorded MDs I auditioned. Recordings from external digital and analog sources were also quite clean.

All of the MD editing and titling functions worked flawlessly. If you need a fast and easy (and high-quality) way to boost your MD collection, this recorder will fill the bill. As for the microphone input, I tried a few takes of my own singing. These came out quite well — in fact, the FBI has requested copies of them for use in hostage situations where they set up a PA system to make the kidnapper surrender as quickly as possible.

The XU-301 is a karaoke's dream machine. The ability to sing along with a CD and immortalize your mix to MD will make at least a few people very, very happy. For others, the XU-301's multifaceted playback strengths will be their delight; it's cool to be able to program a mix of CD and MD tunes. But for most people, the XU-301's recording capabilities are its most valuable feature. Whether you are using the analog or digital input, it makes light work of copying. Record companies may not be amused by how easy this machine makes it to copy their products, but if used within legal limits, observing legitimate copyrights, the XU-301 will add to your enjoyment as well as to your collection of personal MDs. □

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NEW FOR 1998



M&K LCR-55/V-75 Mark II Home Theater System

KEN C. POHLMANN

As I recall, it was the venerable law firm of Miller & Kreisel that handled my sister's fifth divorce. I hear they did a splendid job. Oh, wait. That's not right. Miller & Kreisel is that steakhouse in Manhattan where I met Bruce Willis and had a terrific porterhouse, medium-rare with baked potato.

Wait, that's not right, either. Now I remember: M&K is a loudspeaker manufacturer, initially specializing in subwoofers and now branching out to other types. While D. Jonas Miller and Ken Kreisel have been perfecting their craft for almost 25 years, M&K is perhaps not as well known as some other brands. But it's gaining popularity, primarily at higher price points, and in some circles M&K is the "hot" name in speakers. To test the worthiness of its lower-priced home-theater offerings, we rounded up five LCR-55 satellites and one V-75 Mark II powered subwoofer.

With its sealed wooden cabinet and removable perforated-metal grille, the LCR-55 looks like any other satellite speaker. You can't tell much about a

speaker by looking at the cabinet, but the appearance of the drivers themselves says a lot, and the "build quality" here is evident. These drivers are clearly a cut above the quasi-generic ones you see in many small speakers. And the LCR-55's price — \$225 each — also puts it in a class above most of the competition. The metal grille (possibly a legacy from M&K's professional products) is quite handsome and undoubtedly protects the drivers against damage better than a cloth one.

The LCR-55's binding posts, which accept single or double banana plugs, spade lugs, or bare wires, are recessed so that the speaker can be mounted on a wall using two recessed threaded holes. The small cabinet, made of 3/4-inch-thick wood, is quite rigid. Of course, the speaker is magnetically shielded. It is rated for 10 to 150 watts input power. Nominal impedance is 4 ohms. Frequency response is rated as 85 Hz to 20 kHz ± 2 dB.

At 42 pounds, the V-75 Mark II is a bruiser that's much larger than your typical subwoofer, though much smaller than some other M&K subs. The front-firing 12-inch driver is covered by a removable grille cloth. Unlike the LCR-55's protective grille, this one is strictly cosmetic — a careless poke with a sharp instrument would spell disaster. A protective cover would be a welcome improvement. The power behind the woofer is provided by a built-in amplifier rated at 75 watts. The subwoofer's rated frequency response is 20 to 125 Hz ± 3 dB.

A metal plate on the rear of the sub's sealed-box cabinet accommodates connections and controls. There are four spring-loaded clips for speaker-level stereo inputs from the system amplifier and four more as outputs for speaker-level high-pass-filtered (80 Hz) signals to the satellite speakers. One control knob varies the bass level from fully attenuated to 9 dB above a nominal reference. Another knob sets the low-pass filter anywhere between 50 and 125 Hz; the rolloff is 18 dB per octave up to 125 Hz, then 36 dB per octave. The steeper slope keeps unwanted higher frequencies from reaching the subwoofer. A toggle switch selects normal or inverted phase.

An LED lights when the V-75 Mark II is powered by its hard-wired AC cord. Unlike many other subwoofers, it does not automatically turn on when it senses an audio signal. Rather, the manufacturer recommends that you al-

FAST FACTS

TWEETER LCR-55, 1-inch soft dome
WOOFER LCR-55, 5 1/4-inch cone; V-75 Mark II subwoofer, 12-inch cone
ENCLOSURES both sealed
SIZE (HxWxD): LCR-55, 10 1/2 x 7 x 8 1/2 inches; V-75, 18 1/2 x 15 3/8 x 20 1/4 inches
WEIGHT LCR-55, 11 pounds each; V-75, 42 pounds
FINISH LCR-55, black ash or white; V-75, black ash
PRICE \$1,750 (LCR-55, \$225 each; V-75, \$625)
MANUFACTURER Miller & Kreisel, Dept. SR, 10391 Jefferson Blvd., Culver City, CA 90232; phone, 310-204-2854; Web, www.mksound.com

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HIGH POINTS

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Subwoofer delivers loud, deep bass.

LOW POINT

Audible gap between subwoofer and satellites with some music.

ways leave it powered. Alternatively, you could plug it into a switched outlet that is powered when the rest of the system comes on. The sub is not magnetically shielded, so be sure to keep it away from your TV.

After a good deal of experimentation positioning the speakers, I spent some quality time with my receiver's pink-noise source, normalizing the satellite levels and dialing in a reasonable amount of bass. The former calibration was done using a sound-level meter, but I always handle the latter by ear. Total installation time for this speaker system: 45 minutes.

Although the Lucasfilm/THX folks prefer dipole surround speakers, and Dolby recommends conventional (direct-radiating) "monopole" speakers, I've found that both types can deliver good results in my room, with dipoles providing a better sense of envelopment and monopoles somewhat better surround imaging. With five identical direct-radiating satellites, I expected to get excellent imaging as well as precise timbral matching. Moreover, because the center speaker is identical to the left/right front speakers, I expected absolute continuity across the front.

Romping through a number of DVD movies, including one of my current test favorites, *L.A. Confidential*, I discovered that the M&K system met my expectations and confirmed my preference for home-theater satellite speakers that are not only "matched" but identical. Kim Basinger's whispers and the rest of the dialogue sounded realistically articulate no matter how it was panned across the front. Sounds that moved from side to side or from front to back never wavered in timbral quality. Yes, the ambience was less diffuse than some people may like it, but the localization was accurate.

The system also provided a realistic (but not hyped) sense of panorama and depth. Moreover, the satellites sounded neutral, with little coloration. Although their presence was a tad overbearing with some movie music, on the whole I was quite happy with them for movies.

The center speaker's dispersion suffered when it was placed on its side, so I had to position it sticking straight up on top of the TV cabinet. It looked weird, but I'd rather have a good-sounding speaker than an inconspicuous one.

My pleasure with the satellites was exceeded only by my satisfaction with the subwoofer. Because subwoofers are M&K's specialty, I was not surprised that the V-75 Mark II delivered in spades. Whether it was the fiery explosions in *Terminator 2*, the earthshaking tornadoes in *Twister*, or the mechanical maelstroms in *Das Boot*, this sub really kicked out the jams — especially in the deep bass, below 50 Hz. Moreover, it seemed to play loud effortlessly, to the point where I worried that the neighbors might complain. Combining the V-75 Mark II subwoofer with the LCR-55 satellites made for a near-ideal home-theater setup.

But man does not live by movies alone, so I turned to a number of my critical-listening music CDs. I auditioned a wide variety of tunes, each with its particular sonic demands. Dire Straits' *On Every Street* (Warner Bros.) is an excellent recording (its high-frequency response extends all the way to 22.05 kHz on some tracks). The LCR-55s handled Mark Knopfler's smooth vocals in "Calling Elvis" but added a presence that made some lines sound a bit hard. Also, I clearly heard a gap between the satellites' low end and the sub's high end. For example, although percussion was reproduced with vigor, some of the punch of the tom-toms, appearing around 150 Hz, fell through the cracks. Raising the cutoff frequency on the subwoofer helped, but I still missed some of what I know is in the recording. The same problem occurred in "Bird on a Wire" from *Famous Blue Raincoat* by Jennifer Warnes (Cypress). With other excellent recordings, such as *Further Adventures of Flim & the BBs* (DMP), my sense of a gap between the satellites and sub was less pronounced.

The tweeters in the LCR-55s sounded crisper than I prefer, but they did have good high-frequency extension and were not as harsh as some satellite tweeters. The combined system, and particularly the sub, was very kind to Madonna (who needs all the sonic kindness she can get) — her *Ray of Light* (Warner Bros.) is filled with very low bass samples, and the subwoofer pounded them out with authority.

My classical-music listening included a wide-range recording of the Shos-

takovich Symphony No. 8 by Bernard Haitink and the Royal Concertgebouw Orchestra (London). The second movement is a speaker's worst nightmare, but the M&K system handled it with ease. The piercing brass and strings did not sound too shrill, the dynamics were solid, and the orchestral sheen was bright but not harsh. The massive orchestral tuttis that punctuate the movement were convincing; the deep bass in particular was superb. I still detected that midbass gap between the satellites and the sub, however, which subtracted needed midbass support and made the soundstage seem smaller than it should be. Even so, if my speakers had to do double-duty for home theater and music, I could enjoy this M&K set.

I have been concerned that the proliferation of home-theater speaker packages for around \$1,000 might desensitize listeners to the benefits of better speakers. These M&K speakers reaffirm my belief that a just a few hundred dollars more *can* buy demonstrably better performance. □

TECH NOTES

Our averaged "listening window" quasi-anechoic frequency-response measurements of the LCR-55 satellites showed them to be rather flat: ± 3 dB from 1 kHz to 20 kHz. The crucial range between 1 kHz and 10 kHz was even flatter (± 2 dB), and response smoothly rolled off in off-axis measurements. However, they couldn't cleanly handle any of our bass tone bursts at a drive level equivalent to a 100-dB sound-pressure level (SPL). This probably won't be as apparent with most program material as it was with our test tones, which are extremely revealing.

The subwoofer handled with aplomb all the low bass we fed it, down to 16 Hz at 90 dB SPL and down to 25 Hz at 100 dB SPL. But from its maximum output at 63 Hz its response was down by 3 dB at 36 Hz (which is fine) and at 109 Hz, even with the crossover frequency dialed full-up. The 109-Hz cutoff will create a response gap with satellites, such as the LCR-55s, that can't comfortably reach that frequency.

— David Ranada

SENSITIVITY (SPL at 1 meter, 2.83 volts input, 1 kHz)
 LCR-55 satellite.....87 dB
 V-75 Mark II subwoofer.....n/a

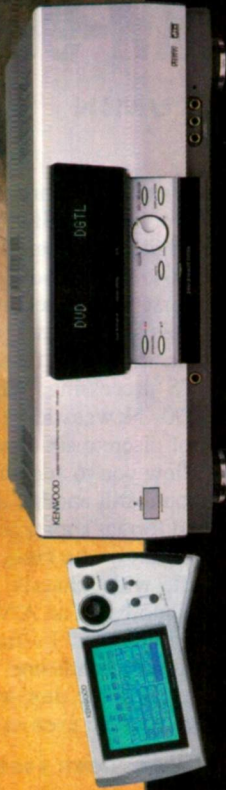
IMPEDANCE (minimum/nominal)
 LCR-553.9/4 ohms
 V-75n/a

BASS OVERLOAD FREQUENCY
 (at 90/100 dB SPL)
 LCR-5563/200 Hz
 V-7516/25 Hz (see note above)

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Sherwood Newcastle AVP-9080R Preamp/Tuner and AM-9080 Power Amp

DANIEL KUMIN

Sherwood was first to bring out an A/V receiver with both Dolby Digital (DD) and DTS surround-sound decoding on board. Now it's first with a relatively affordable (for this pricey category) preamplifier/tuner that also features both DD and DTS processing. What's more, the \$1,200 Newcastle AVP-9080R has a set of discrete six-channel input jacks that allow you to add an external decoder should still another digital surround-sound format appear in the future — and these days, who knows?

Built on a tall, wide chassis, the AVP-9080R looks more like an A/V receiver than a preamp/tuner. Its titanium-gray finish is very handsome, but the color scheme makes the tiny, white lettering all but unreadable even in full

daylight. One front-panel continuous-rotation knob serves up digital-domain master volume control; the other is for input selection. The six big pushbuttons are for turning on the power and selecting surround modes. The remaining controls are concealed behind a drop-down door along the front panel's bottom edge. Small keys are set into the door's inside surface, making it a flat, horizontal control panel when open — pretty slick. (Happily, the inside of the door panel is jet black with relatively readable bright-white lettering.)

The AVP-9080R's rear has an extensive collection of connectors, including a phono input, two audio tape loops, and the six-channel external-decoder input. There are six A/V inputs: two record loops and four playback-only in-

FAST FACTS

RATED POWER (AM-9080): 120 W x 5 into 8 ohms, all channels driven, from 20 Hz to 20 kHz with no more than 0.05% THD; 170 W x 5 into 4 ohms, with no more than 0.09% THD

KEY FEATURES (AVP-9080R)

- DTS and Dolby Digital/Pro Logic surround decoding
- Component-video DVD input/output
- One coaxial, one optical, and one dedicated AC-3/RF (laserdisc) digital input
- Six A/V inputs, including two record loops
- Five audio inputs, including phono and two audio tape loops
- Preprogrammed multicomponent remote controller

DIMENSIONS AVP-9080R, 17 $\frac{3}{8}$ x 5 $\frac{1}{2}$ x 15 inches; AM-9080, 17 $\frac{3}{8}$ x 7 $\frac{1}{8}$ x 17 $\frac{3}{4}$ inches

WEIGHT AVP-9080R, 36 pounds; AM-9080, 68 pounds

PRICES AVP-9080R, \$1,200; AM-9080, \$1,200

MANUFACTURER Sherwood USA, Dept. SR, 14830 Alondra Blvd., La Mirada, CA 90638; phone, 714-521-6100; Web, www.sherwoodusa.com

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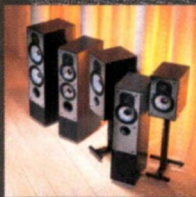
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— Carey Greenberg Audio, on the Paradigm Mini Monitor

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Only two multipurpose digital inputs.
Remote control can be confusing.
Merely average radio performance.
Merely average, or worse, DSP ambience modes.

puts (one of these is a front convenience set behind the drop-down door). All of the video inputs and outputs have both composite- and S-video connections. A loop-through circuit lets you connect a DVD player and a high-end TV set using a component-video output and input — the highest-quality video signal pathway — while retaining the convenience of centralized A/V control. This is the first A/V preamp or receiver I've seen with component-video jacks.

The Sherwood's three digital ports include one optical and two coaxial ports — one of the latter reserved for an AC-3/RF signal from a Dolby Digital laserdisc player. Just two multipurpose digital inputs aren't nearly enough for a preamp/processor in this price range. Plug in a DVD player and a digital satellite TV receiver — or, in the near future, a DTV set-top box — and you're already out of inputs. If you then want to take advantage of the AVP-9080R's DTS compatibility by hooking up a CD player or the DTS output from a laserdisc player — or a MiniDisc recorder, a DAT deck, a digital camcorder, or some other digital audio source component yet to appear — well, you can't. We're all going to need more digital inputs in the near future, and I would expect to see them appearing on higher-end gear like this first.

I also question the wisdom of squandering a dedicated input on built-in AC-3/RF demodulating. You don't need it for DTS laserdiscs, and however much we might mourn it, laserdisc is a dead format. (I'm certainly not spending my money on new laserdiscs, whether Dolby Digital- or DTS-encoded. *Stereo Review's* coin is another matter.)

The companion AM-9080 power amp is far simpler: five channels of 120 watts each, five gold-plated RCA inputs, five heavy-duty, banana-plug-com-

patible speaker outputs, one Digi-Link RCA jack, and one thick power cord, all in a simple, titanium-gray case. The faceplate has a power button, the Sherwood Newcastle logo, and a "Totally Discrete Power Amplifier" label — that's it. (It's, like, totally discrete, dude — *totally*.) Connect the Digi-Link jack to its twin on the AVP-9080R, and the two will power up and down in lock-step. Neat work, guys.

Inside, the AM-9080 looked gratifyingly solid, with five fully independent modules each with its own duet of big power-supply capacitors and — dare I say it? — *totally* discrete driver stages and output transistors. This amp has not one but two very large and heavy transformers. It weighs a sumo-like 68 pounds and appears to have been engineered as two almost entirely separate power amps on the same chassis — a two-channel and a three-channel job — that share little beyond the power cord. The AM-9080 is no pseudo-high-end impostor but a genuine separate-component power amplifier.

The preamp/tuner is as tidily built as

the amp, though much more spacious inside. Parts quality was very good, including high-grade circuit boards and an all-Motorola 56000-series digital signal processing (DSP) chip set. The AVP-9080R appears to be built on the same metal chassis as Sherwood's Newcastle A/V receivers, with at least similar-looking power-supply and input-output layouts. The layout of its controls is completely different, though the functions and on-screen menus are virtually identical.

I set up the Sherwood components much like an A/V receiver, with the AM-9080 amp driving my usual five-speaker home-theater suite. To stress the amplifier thoroughly I ran the large, main left/right towers full-range most of the time. I also used my 12-inch powered subwoofer for a while to check crossover operations.

The AM-9080 provided clean, quiet, dynamic output and drove my speakers to the highest levels I desired, and then some, with most program material. It handled the DTS version of the Allman Brothers' *Live at the Fillmore* CD —

IN THE LAB

COMBINED AVP-9080R/AM-9080 DOLBY DIGITAL (AC-3) PERFORMANCE

All data obtained from Dolby Labs' AC-3 test DVD using dithered test signals, which set limits on measured distortion and noise. All channel-level controls and LFE attenuation set to 0. All speakers set to "large." Reference input level is -20 dBFS* unless otherwise stated; reference output level is 2.83 volts into 8 ohms. All are worst-case figures.

Output at clipping (1 kHz, 8/4 ohms)
one channel driven (front)132/194 W
one channel driven (surround)....129/195 W
five channels driven (8 ohms).....108 W

Distortion (THD+N, 1 kHz)
8 and 4 ohms.....0.01%

Noise (A-wtd)
left surround-72.5 dB

Excess noise (with signal)
16-bit (EN16)+2.5 dB

Frequency response (20 Hz to 20 kHz)
left surround+0.1, -0.9 dB

Channel imbalance (individual channels set at 0-dB gain).....0.6-dB spread

Subwoofer output frequency response
about 18 dB/octave rolloff above 115 Hz

High-pass filter frequency response
12 dB/octave rolloff below 108 Hz

Max. unclipped subwoofer output
9.3 volts

Subwoofer distortion (master volume at -3, sub trim at -3 dB)**30%

AVP-9080R, DTS PERFORMANCE

All test signals obtained from DTS demo/test CD. The signals originated in the analog domain and may contain inherent distortion and noise. Volume control setting was the same as for Dolby Digital. Reference output level is 4 dB higher. Figures are worst-case.

Frequency response (20 Hz to 20 kHz)
right surround+0.07, -0.83 dB

Distortion (THD+N, 1 kHz)
center0.03%

AVP-9080R, STEREO PERFORMANCE, DIGITAL INPUTS

Reference volume setting for noise is the same as for Dolby Digital; subwoofer off.

Linearity error (at -90 dBFS*).....+1.3 dB

Noise (A-wtd)-72.5 dB

Excess noise (with/without signal)
16-bit (EN16)+1.15/+3.5 dB

Tone-control range
100 Hz±9 dB
10 kHz+10, -9 dB

Frequency response (in Tone Direct mode, 20 Hz to 20 kHz)+0.2, -0.4 dB

* dBFS = decibels referred to digital full-scale

** All six channels driven by 30 Hz at 0 dBFS. The subwoofer output clipped at -14 master volume setting, with the sub trim at 0 dB.

my high-output 5.1-channel touchstone — with aplomb. And on the test bench the AM-9080 maintained almost its full output with all five channels driven to clipping, losing less than 1 dB relative to single-channel clipping despite moderately sagging AC line voltage. It performed better in this regard than most of the A/V receivers and several of the multichannel amplifiers that I've tested. Big power transformers and separate storage caps are apparently worthwhile. (Whoever recommended buying power amps by the pound was on to something.)

The performance of the Sherwood components together was just about as exemplary as that of the power amp alone. Surround-sound reproduction from Dolby Digital and DTS recordings was superb. I've never heard the DTS *Toy Story* laserdisc sound better, with ultra-high definition and full dynamic clarity in the subtle Foley work in which this soundtrack abounds. With the Dolby Digital soundtrack on the *Seven Years in Tibet* DVD, the endless variety of temple drums, gongs, chants, and highly atmospheric effects combined with the sumptuous John Williams score to be nothing short of hypnotic — even with the picture turned off. (Anyone who still doubts the value of 5.1-channel digital surround sound should audition the Dalai Lama audience scene "blind," first in Pro Logic and then in Dolby Digital.) I became engrossed in what, after all, isn't a very good movie simply because it sounded (and looked!) so fabulous.

Stereo Review has been experimenting with some tests, devised by technical editor David Ranada, of the audibility of noise and distortion generated by the digital-to-analog (D/A)/DSP platforms used in all 5.1-channel digital audio electronics. The results with the AVP-9080 were reassuring. It's too early in this research project to draw firm conclusions, but the D/A converters for the five main channels appear to be excellent performers.

Sherwood was kind enough to lend me a prerelease reference CD-R of a DTS multichannel mix of the Mozart Symphonies Nos. 35 and 36 (orchestra and conductor unidentified). While this recording was balanced a bit on the bright side (with a somewhat energetic surround mix to boot), it still sounded terrific. The dynamic contrasts in the scherzo of the Symphony No. 35 in particular showed how discrete multichannel recording can dramatically en-

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hance every aspect of well-recorded music — not just the spatial cues.


The AVP-9080R's radio performance was strictly average, with decent hi-fi sound on strong local FM signals. Mediocre to poor reception of weak or distant signals made serious listening to them impossible, however, and AM performance was no better.

The additional surround modes (Theater, Hall, Stadium, and Church) are four-channel programs with lots of reverb in the front and surround channels. Because all four modes induced significant timbral shifts — especially Church, a "boingy" setting with a particularly long decay — they are not musically useful.

I had a mixed response to the functionality and ergonomics of the Sherwood Newcastle 9080 duo. For one thing, the preamp/tuner does not automatically select the appropriate surround mode for an incoming digital signal, which can have unfortunate consequences. If you play a DTS-encoded CD or laserdisc after listening to a stereo disc with standard PCM audio and forget to select the DTS mode manually, you will hear full-output noise — a disturbing experience, and potentially a destructive one depending on where you left the master volume.

As of midsummer, I have still not seen a DTS-encoded DVD, so I cannot report on the AVP-9080R's effectiveness with this so-far mythical creature. So what's the deal, anyway? The few dozen DTS laserdiscs I have are almost uniformly superb, but as I noted earlier, the laserdisc is dead — long live the DVD. Of the two dozen or so DTS CDs I've auditioned, only four or five contain programming that any musically sensitive person would want to listen to all the way through, much less more than once. Yet manufacturers are fairly falling over themselves to get DTS-equipped components on the shelves — Sherwood was merely the first. Meanwhile, I've not heard a conclusive comparison that reveals an audible difference between DTS and DD. (For more on the DTS saga, see "Random Play" in September, page 8 —Ed.)

End of rant: back to the AVP-9080R's surround-mode selection. If you play a stereo CD using your DVD player (there is no real reason to use separate machines for CD and DVD playback) and afterward load a 5.1-channel Dolby Digital DVD, it will play in down-converted two-channel mode instead of 5.1-channel surround until you specifi-



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... you've got questions. We've got answers.®



Technics SF-DX6 Digital Surround-Sound Package

KEN C. POHLMANN

It's amazing. Frankly, I don't see how manufacturers make any money in this business. The gear keeps getting more and more sophisticated, and the prices continue to drop. I'm glad I'm only reviewing (and enjoying) the stuff, and not making it. Consider the SF-DX6, a surround-sound package that pairs two different stand-alone components. When you open the single big box, you discover a Technics SA-AX6 receiver and SH-AC500D surround processor. This duo marries a Dolby Pro Logic (DPL) A/V receiver with a processor featuring both Dolby Digital (DD) and DTS decoding. Moreover, it provides all this at the amazingly low price of \$600 — about \$100 less than if you'd bought the receiver (\$400) and processor (\$300) separately.

Although the two units look similar, their styling is not matched. In addition, each comes with its own remote control, and the manuals do not refer to each other, suggesting that while this marriage is completely workable, it

FAST FACTS

RATED POWER 100 W x 6 into 6 ohms, all channels driven, 20 Hz to 20 kHz with no more than 0.9% THD+N

KEY FEATURES

- Dolby Digital and DTS decoding
- Choice of line-level or amplified output to subwoofer
- Two coaxial, two optical digital inputs on processor
- Three A/V inputs (two with S-vidео, one tape loop) on receiver
- CD and phono inputs, one tape loop

DIMENSIONS SA-AX6 receiver, 12 x 6 1/4 x 15 inches; SH-AC500D processor, 17 x 2 3/4 x 11 7/8 inches

WEIGHT SA-AX-6, 24 1/2 pounds; SH-AC500D, 5 3/4 pounds

PRICES \$600 total (SA-AX6 alone, \$400; SH-AC500D alone, \$300)

MANUFACTURER Technics, Dept. SR, One Panasonic Way, Secaucus, NJ 07094; phone, 800-222-4213; Web, www.panasonic.com

wasn't a love match. Because the SH-AC500D is a self-contained DD/DTS processor, it could be married to any receiver with a six-channel input that lacks DD (or DTS) decoding. And, of course, the receiver's six-channel analog input could be fed by any DVD player with a built-in Dolby Digital processor. If you eschew DD and DTS altogether, the SA-AX6 works fine on its own as a Pro Logic receiver.

Still, they make an impressive couple. The SA-AX6 is particularly striking with its large central volume knob (which has a silky but slightly wobbly feel), strips of blue lighting, and a tinted panel that swings forward to reveal additional controls. Hands-down it's the best-looking A/V receiver I've seen at its price.

Appearance aside, there are some nifty features, too. Instead of the usual input-selector buttons (usually with illegible labels), the SA-AX6 has a selector knob that clicks across eight different inputs, each flashing its own LED when picked. A nearby button instantly bypasses the input selector in favor of the six-channel input from the processor. Very nice. Another cool knob is the subwoofer-level control. This is one of the most important controls on any A/V receiver, and I absolutely hate receivers that bury it. The SA-AX6 makes it prominent so that you can dial in more bass for movies, less for music.

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Model 88 also uses techniques like biampification and electronic contouring (a technique pioneered by Henry Kloss) to create a natural, accurate octave-to-octave tonal balance over the entire range of music. And its FM tuner outperforms even "high-end" receivers.

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IN THE LAB

or anything in between. The dial is calibrated with hash marks, which help you remember just where that sweet level was last time. Nearby is an adaptive subwoofer control that can boost the bass level for listening at a low volume. The receiver's six channels are identically rated for 100 watts into 6 ohms, and the sixth channel means that you're not limited to using a powered sub.

Flip down the tinted panel and you'll find more goodies. Most important are three knobs for adjusting bass (± 10 dB at 50 Hz), treble (± 10 dB at 20 kHz), and balance. Call me old-fashioned, but I prefer knobs over some kind of menu-driven deal. There is also a knob for adjusting the subwoofer low-pass filter continuously from 50 to 200 Hz, but it's not active when the six-channel input is selected, as this must be handled upstream at the decoder.

Other controls behind the tinted panel include selector buttons for sound-field processing (Hall, Club, Theater, and so on) and two buttons for receiver tuning. Is the relative obscurity of these buttons a comment on the declining importance of radio in our home theaters? Maybe not, because up to 30 stations can be preset for random access from the front panel. Although there are other buttons for engaging Pro Logic, adjusting delay time, and so on, in practice they're not used — the SH-AC500D processor does the honors upstream. The dot-matrix display is highly legible and more informative than most, explaining as it scrolls, for example, that you've made an error and that a feature you've selected is not possible in the current mode.

Like most receivers, the SA-AX6 features a plethora of connectors on its rear panel. There are banana-plug-compatible binding posts for six speakers as well as a secondary set of posts for a "B" pair of remote speakers (these can also be used for biamping a front speaker). Three RCA jacks provide a convenient front-panel A/V input. There are also plenty of rear RCA jacks: CD and phono inputs, audio and video tape loops, and two additional A/V inputs, plus the all-important six-channel audio input. There are two S-video inputs and one S-video output. A cooling fan helps keep temperatures below the boiling point.

The SA-AX6's remote control duplicates some front-panel controls and adds a few of its own, including a numeric keypad. The remote's volume control turns the receiver's motorized

SH-AC500D DECODER, DOLBY DIGITAL (AC-3) PERFORMANCE

All data obtained from Dolby Labs' AC-3 test DVD using dithered test signals, which set limits on measured distortion and noise. Channel-level gain controls set to 0. All speakers set to "large" except for high-pass and low-pass measurements. Reference input level is -20 dBFS; reference output level is 2.83 volts into 8 ohms. All are worst-case figures.

Frequency response	surround ...20 Hz to 20 kHz +0.17 -0.07 dB
Channel imbalance<0.52 dB spread
Distortion (1 kHz, THD+N)	at -20 dBFS.....0.03%
Noise (A-wtd)-75.6 dB
Excess noise (with signal)	16-bit (EN16)+3.1 dB
Subwoofer output frequency response	20 dB/octave rolloff above 100 Hz
High-pass filter frequency response	12 dB/octave rolloff below 100 Hz
Maximum unclipped subwoofer output	7 volts
Subwoofer distortion**12%

SH-AC500D, DTS PERFORMANCE

All data obtained with DTS demo/setup CD. The test signals originated in the analog domain and may contain inherent distortion and noise. Reference output level is 4 dB higher than for Dolby Digital. Figures are worst-case.

Distortion (1 kHz, THD+N)	at -16 dBFS*0.018%
Frequency response	surround20 Hz to 20 kHz +0.03, -0.1 dB

SH-AC500D, STEREO PERFORMANCE, DIGITAL INPUTS

Reference volume setting for noise is the same as for Dolby Digital; subwoofer off.

Linearity error (at -90 dBFS*)-0.2 dB
Noise (A-wtd)-73.5 dB
Excess noise (with/without signal)	16-bit (EN16)+2/+2 dB
Tone-control range	100 Hz+8.4, -8.2 dB
	10 kHz+8.9, -10 dB
Frequency response	20 Hz to 20 kHz +0.01, -0.08 dB

SA-AX6 RECEIVER, MULTICHANNEL OPERATION, DVD INPUT

Output at clipping (1 kHz, 8/4 ohms)	one channel driven102/152 watts
	five channels driven (8 ohms)80 watts

Distortion (THD+N, 1 kHz)	8 and 4 ohms.....0.084%
----------------------------------	-------------------------

Noise (A-wtd, re 200-mV input)-68 dB
---------------------------------------	-------------

Frequency response	20 Hz to 20 kHz +0, -0.44 dB
---------------------------	--------------------------------

SA-AX6, STEREO OPERATION, ANALOG INPUTS

All measurements worst case. Reference output level is 1 watt. Both channels driven.

Output at clipping	(1 kHz, 8/4 ohms)106/140 watts
---------------------------	--------------------------------------

Distortion (THD+N, 1 kHz)	8 and 4 ohms.....0.018%
----------------------------------	-------------------------

Noise (A-wtd, re 200-mV input)-79.7 dB
---------------------------------------	---------------

Frequency response	20 Hz to 20 kHz +0.34, -0.37 dB
---------------------------	-----------------------------------

RIAA de-emphasis error	(20 Hz to 20 kHz)+0.35, -1.68 dB
-------------------------------	--

Line-level subwoofer output frequency response	12 dB/octave rolloff above turnover frequency variable between 57 and 230 Hz
---	--

SA-AX6, TUNER SECTION

All figures are for FM only.

Sensitivity (50-dB quieting)	mono21.2 dBf
	stereo36.1 dBf

Capture ratio (at 65 dBf)1.8 dB
----------------------------------	-------------

AM rejection72.7 dB
---------------------	--------------

Selectivity	alternate-channel.....60.5 dB
	adjacent-channel.....7.7 dB

* decibels referred to digital full-scale
** at 30 Hz, all six channels driven to 0 dBFS, all speakers set to "small"

TECH NOTES

Nearly all of the data point to fine performance except the noise levels of the receiver's multichannel DVD input. As our level-playing-field measurements allow you to see, the center and surround channels are substantially noisier at -68 dB than the outputs of the surround decoder at -75.6 dB. Only noise results lower than -70 dB in these measurements can be expected to be generally inaudible at normal playback volumes. The SA-AX6 receiver's performance is marginal in this respect.

I'm told by the developers of the DTS system that the two test signals issued so far originated in the analog domain and may be contaminated by noise and distortion, so take our DTS distortion measurement with a grain of salt. — David Ranada

knob. (I first saw that feature 20 years ago, and you know what? I still think it's pretty neat.) The remote is programmed to control certain CD players,

cassette decks, DVD players, VCRs, and TVs — but *not* the companion processor.

The SH-AC500D processor is some-

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"stereo imaging is phenomenally sharp – some of the best I've heard...some of the speakers I'm comparing it to cost \$1900 to \$2800."
- High Performance Review



what more utilitarian-looking than its mate. Its front panel is dominated by a single large knob (with a silky-smooth feel) that continuously adjusts volume. Three buttons select a digital input, and another provides a line-level pass-through. The display is concise but informative: a diagram shows you which speakers are active, and labels light up to confirm the selected surround-processing mode.

The rear panel of the SH-AC500D has the six-channel decoded output as well as a six-channel pass-through input for some other six-channel source, such as a digital-TV set-top box, and two optical and two coaxial digital inputs. It's worth noting that this processor cannot handle digital input signals that are sampled at 96 kHz, MPEG-encoded, or that use other nonvanilla formats. The SH-AC500D's remote is pretty basic, but the processor is also fairly

set the appropriate delay for each channel. No problem.

I started my audition with a DVD of *Eraser* (Warner). Okay, it's not great cinema, but things fly around a lot and blow up real good. The Dolby Digital soundtrack on this release is quite clean, and I listened for any decoding artifacts such as slurred transients or strange localization. I did not hear any problems. I suspect that this Technics processor contains the same DD chip sets as many other decoders, and thus delivers the same results.

I do not have any DVD movies coded with DTS soundtracks — nor does anyone else, I suppose — but I have a big pile of music CDs encoded with DTS, including *Boys II Men II*, the Eagles' *Hell Freezes Over*, and Steely Dan's *Gaucho*, all on DTS's own label. These are excellent recordings (*Gaucho* is a classic in that respect), and they

The Technics duo had no Dolby Digital problems, and the DTS-encoded CDs that I played all sounded excellent.

simple, and its remote can handle everything the front panel can.

On the test bench, nearly all the results were fine (see "In the Lab" on page 52), but the proof is in the pudding, or in this case the listening. I dropped the SF-DX6 duo into my listening room (total weight about 30 pounds) and hooked up everything. I connected a DVD player to the processor with an optical cable (supplied) and connected six analog lines from the processor to the receiver. From the receiver, I ran a video cable to my monitor, five speaker cables, and a line-level output to my powered subwoofer.

After a quick smoke test (negative), I began the setup procedure. As noted, each of these components comes with its own remote. I'm sorry, but I don't need another remote. I know full well that the audio industry has made a devilish pact with the battery industry to insure that we spend at least half of our pretax income on batteries, but please, give me a break! Anyway, working with the processor's remote, I selected the appropriate bass-management options for my speakers, then used the processor's internal test tone and a sound meter to adjust levels. Finally, I

sound even better in DTS surround mode. Yes, you can quibble about the engineers' surround placement of rap, backup vocals, percussion, and other elements, but the effect is overwhelmingly more exciting than any two-channel stereo playback.

The DTS decoding itself was excellent. I have listened to these CDs with a variety of DTS decoders, and the one in the SH-AC500D was as good as any of them. I immediately heard clean channels with distinct localization and a superb low end. I was entirely pleased with this decoding, which did not seem inferior in any audible way to the output from higher-price processors I've auditioned (they may have used the same decoding chip set as this one).

One concern that emerged from the test-bench data was the noise levels of the receiver's six-channel inputs. In the listening room, I focused my ears on the center and surround channels and came away fairly satisfied. Yes, with soft program material and boosted levels, I *could* hear the noise. Will this ruin the sonics in normal use? No. For most people, I think the noise level is acceptable, but if you have a low tolerance for noise, shop elsewhere.

HIGH POINTS

Great value.

Front-panel subwoofer-level control.

Six 100-watt channels.

LOW POINTS

Styling of processor and receiver doesn't match.

Two separate remote controls.

Noisy multichannel output.

I spent some time verifying the features in the SA-AX6 and found no defects in the review sample. I especially liked the knob for input selection (a growing trend in many receivers). I also enthusiastically enjoyed being able to adjust subwoofer level with a front-panel knob (though I would have liked to do it with the remote, too). The sound-field processing was adequate but certainly not the best I have heard. The various modes were not especially realistic — in fact, the processing sounded distinctly artificial, as is the case with the ambience modes offered on most reasonably priced receivers. Still, if used in moderation, the SA-AX6's ambience modes will get you through the night. Regarding the host of other features, I didn't find any omissions. For example, you can even change the impedance of the output amplifiers, and if you have an irrational fear of blue lights, you can turn off the lighted blue bars on the front panel. What more do you want?

Finally, to conclude my audition, I cranked up the volume level to stress the receiver's amplifiers. The receiver uses the Technics Class H+ power-amp design in which two power rails supply voltage to the output devices as needed. This decreases the continuous power draw, leading to cooler, more efficient operation. However, during transients, the circuits must ramp up quickly to deliver more power as needed. I'm not sure that Class H+ is miles better than more conventional amp designs, but it did deliver sound that was quite clean, with good transients. The SA-AX6's six 100-watt channels should fill most listening rooms with no sweat.

Together, this electronics duo proves that amazing things can come in low-cost packages. Once upon a time, surround sound was an expensive proposition. Now, with packages like the SF-DX6 and many of today's A/V receivers, it is within reach of most movie and music lovers. □

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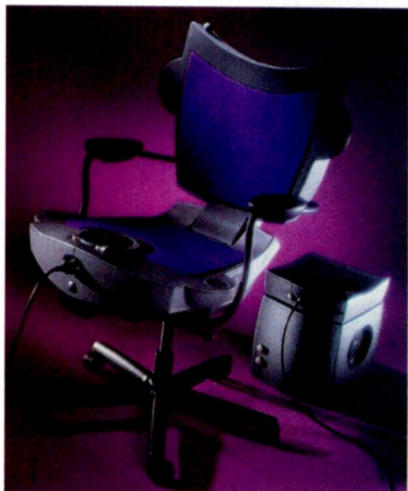
A Kick in the Rear

You can hear — and feel — the action with BSG Labs' Intensor chair

The Intensor from BSG Labs will never replace a home-theater speaker system, but that doesn't mean it can't be *fun*. The Intensor is no ordinary chair — and not only because it has purple “comfort pads” on its gray plastic body. It's the four speakers built into the seat and back that first caught my attention.

The fully loaded Intensor is a three-piece system for \$600 that includes the chair, an amplifier with a total power output of 80 watts, and a bass module with its own built-in 40-watt amp. Sitting in the chair, you have a 2-inch midrange driver outside each of your thighs. At the front of the seat, right between your knees, is a 5¼-inch wide-range driver. On top of the chair's back, facing straight up, is a 2-inch tweeter. The separate bass module has two 5¼-inch woofers in a tuned-port enclosure, and the amp is designed to sit neatly on top of it. The Intensor throws in an extra kick: an adjustable tactile transducer (actually a fifth driver sealed in the chair's back and configured for maximum tactile power) that lets you *feel* what's going on even if you mute the chair's other speakers by plugging in a set of headphones.

So who's the Intensor for? It's really for heavy gamers, those who know every weapon available in *Quake* and solved



every bonus round in *Crash Bandicoot* on the first try. But it can also work with any line-level stereo audio source.

The Intensor is also available without the bass module and chair base for \$299. Without the base, it becomes portable, folding in half clamshell style. But unless you're comfortable sitting on the floor, get the base.

The Intensor's audio and tactile perfor-

mance was pretty good when I was playing games but fell short for critical music listening. I found it difficult to adjust the volume and crossover controls on the bass module so that it couldn't be localized. I also found that the tactile feedback didn't add much to music; it wasn't subtle enough. But blowing up an enemy in *Quake* was all the more satisfying, and passing another car in the driving game *Gran Turismo* was, well, more intense.

— Brian Fenton

BSG Laboratories, Inc., Dept. SR,
638 Harrison Ave., 3rd Floor, Panama City,
FL 32401; phone, 800-274-5227; Web,
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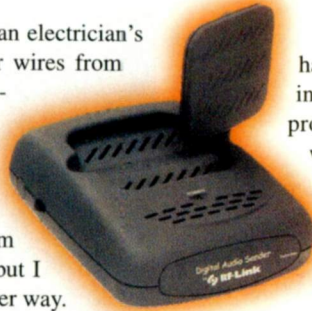
Digital Wireless

RF-Link Digital Audio Sender

Do you know how to use an electrician's fish tape to snake speaker wires from your A/V receiver to another room? I've gotten pretty proficient at it — adding a couple of pairs of in-wall speakers to a whole-house audio system was a good education — but I still wish there was an easier way.

It turns out there is: the Digital Audio Sender (\$250) from RF-Link Technology, which consists of a transmitter and a receiver. Each small unit measures about 4½ x 6 x 2 inches and is powered by a “wall-wart” AC adapter. The transmitter has a line-level stereo audio input, and the receiver has a line-level stereo output. Each unit also has a small (about 2¾-inch-square) antenna that flips up from the base and rotates for aiming.

The system operates at the rather high frequency of 2.4 GHz, so it's immune from interference from such 900-MHz sources as cordless phones and baby monitors. It *is*, however, susceptible to interference from microwave ovens — their magnetrons run near the same frequency. The system can operate on one of four frequencies between 2.4 and 2.4835 GHz, selectable by four-position slide switches.



The Digital Audio Sender has many potential uses. For instance, in a home theater it provides an elegant and easy way to get an audio signal from a receiver to a powered subwoofer.

However, I used it to shuttle signals from FM and satellite broadcasts out to my home office, which is in a detached garage about 55 feet behind my house. The receiver I have out there is not hooked up to a rooftop antenna, and it just doesn't deliver the performance I want. The Digital Audio Sender worked perfectly, without introducing any artifacts of its own into the audio — except when I fired up the microwave to reheat the dinner I missed earlier in the evening! It sounded no different from a hard-wired connection. The system is rated to have a clear, line-of-sight range of 100 feet, but I found it to be somewhat less, topping out at about 60 feet in my installation.

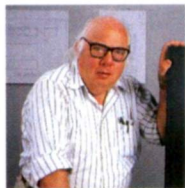
All in all, however, RF-Link's Digital Audio Sender is the perfect solution when wires just won't do.

— B.F.

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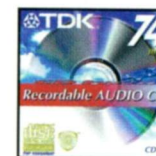


start a revolution

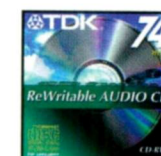
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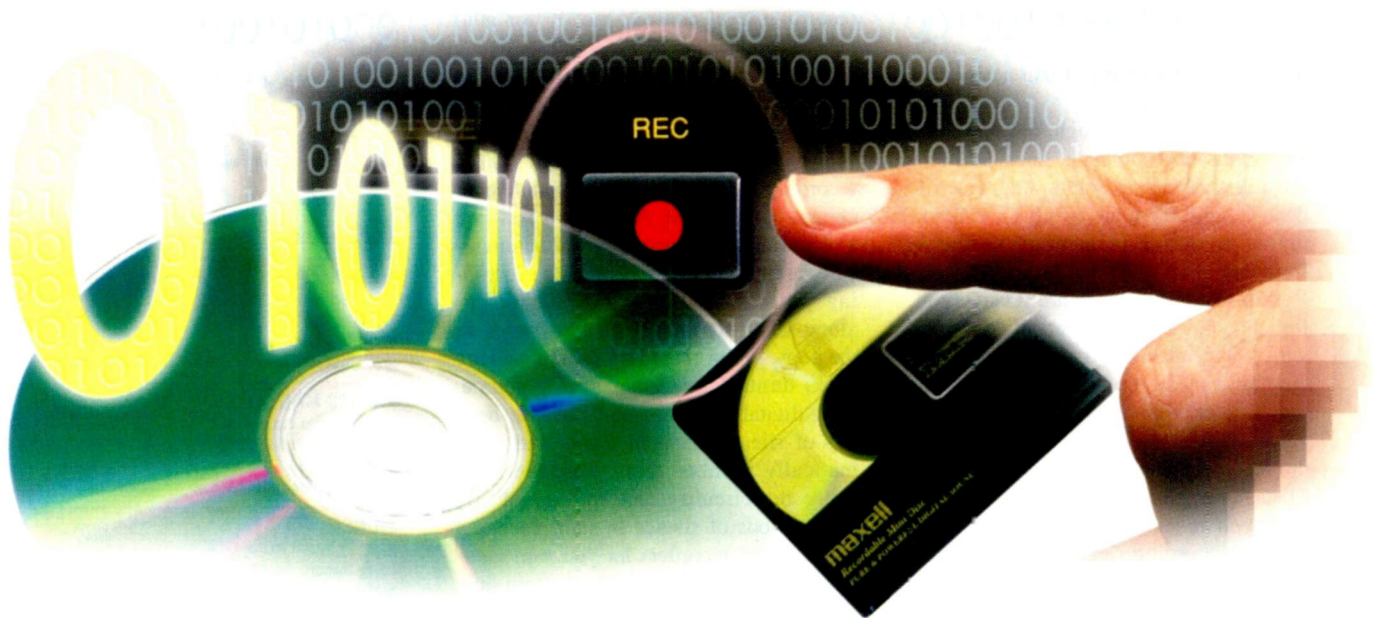


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SHOPPING MADE SIMPLE

A Guide to Digital Home Recorders

Will it be recordable CD or MiniDisc?

Even though we all wear Levi's and were simultaneously disappointed by the last *Seinfeld* episode, we Americans are rugged individualists. Or at least that's how we like to think of ourselves. The Marlboro Man is a mass-produced icon of individuality, and many of us aspire to an independent cowboy lifestyle, but the point of the advertisement is to persuade people to smoke the same brand of cigarettes. Similarly, Burger King produces billions of essentially identical hamburgers while advertising, "Have it your way." It's a sociological paradox.

The same paradox of mass consumption tinged with individuality applies to music. A relatively small handful of albums form the core music libraries of millions of Americans. Yet within that commonality, we each have our own prefer-

ences. While you like Tracks 1, 3, and 5 on Natalie Imbruglia's CD, I prefer Tracks 2, 4, and 6 — especially when played in reverse order. You may like to mix rap tunes with surf music, but I like alternating between country and western. The point is that even though we listen to a lot of the same music, we like to experience it in different ways.

Enter digital audio recorders. They provide a way to assemble your own musical compilations with consistently outstanding sonic quality, creating entirely new soundscapes to enjoy at home, in the car, or on the beach. And if you're a true cultural rebel, you can even make professional-sounding recordings of your own musical creations.

The downside? Compared with the tried-and-true analog cassette deck, digital recorders — and the blank discs they use

by Ken C. Pohlmann

— cost more. Then there's the time it takes to organize and record your own personal mix: depending on how ambitious or fussy you are, it can easily consume many hours.

For many folks, though, the upside far outweighs the downside because home recording is their passion. And much to their delight, there are two basic types of digital recording technology to choose from: recordable CD and MiniDisc (MD). Both kinds of recorders are relatively affordable and almost universally equipped with stereo analog and digital inputs and outputs (coaxial, optical, or both) so that they'll work with a variety of equipment. All MD recorders and consumer CD audio recorders also contain the Serial Copy Management System (SCMS), which allows you to make a digital copy of an original recording (legally only for your own use), but not a copy of the copy.

Like analog cassette decks, most digital recorders have bar-graph recording-level meters. With an analog input, you adjust the recording-level control for a nice healthy level that's just shy of clipping. When recording from a digital input, you don't have to worry about setting levels — a digital bitstream's level is

fixed. (Some MD recorders have *digital* recording-level control, mostly for auto fade-ins and fade-outs.)

As you can see from the accompanying tables, today's digital machines offer several recording modes. Some models offer "CD-synchro" recording, which makes recording from a CD player a simple one- or two-button affair. After you've started a recording, most recorders will automatically assign track numbers as the recording progresses. Some will even carry along CD-Text data from the source to the copy. When recording from a cassette deck, turntable, or other analog source, most digital recorders can listen for periods of silence between tracks and automatically number them. However, because the circuitry can be "fooled" by long periods of silence in some recorded works, most recorders let you turn automatic track marking off. The bottom line: With a little practice, you'll have no problems making compilation copies from LPs, tapes, and CDs.

Recording on CD There are two kinds of recordable CD. The first, called CD-R (recordable), is a nonerasable, "write-once" format that was introduced in 1992.

Compact Disc Recorders

Manufacturer	Model
MARANTZ 440 Medinah Rd. Roselle, IL 60172 630-307-3100 www.marantzamerica.com	DR-700
PHILIPS MAGNAVOX 64 Perimeter Center E. Atlanta, GA 30346 800-531-0039 www.philipsmagnavox.com	CDR 765
	CDR 880
	CDR 760
PIONEER 2265 E. 220th St. Long Beach, CA 90801 800-746-6337 www.pioneerelectronics.com	Elite PDR-99
	PDR-05
	PDR-555RW

A 74-minute CD-R blank costs about \$5, which is several bucks more than blank computer CD-Rs (which won't work in a consumer CD-R audio recorder). You can record tracks one at a time on a CD-R and play them back at any time on the same or, perhaps, another CD recorder. However, you cannot play a partially recorded CD-R on a conventional CD player until the disc has been "finalized" — an automated 2- to 4-minute process that converts the CD-R's temporary table of contents (TOC) into a permanent one that can be read by all CD players.

Once a CD-R's TOC is finalized, you cannot record any additional tracks on that disc. You can, however, do some simple editing before you finalize the TOC. If you missed the start of a song, for example, you could delete that track from the table of contents so that the player will skip over it. Most regular CD players and CD recorders will recognize the "deletion" and skip over that track.

Erasable CD A more flexible version of recordable CD, known as CD-RW, became available late last year. The RW stands for "rewritable," which means that the entire disc (or part of it) can be erased and rerecorded. This increased flexibility comes at a price, however: one 74-minute CD-RW blank disc costs about \$18 to \$29 on the street, or more than *five times* the cost of a CD-R! And, as with CD-R, you can only use CD-RWs designated for consumer audio, which are considerably more expensive than computer CD-RWs.

What About DAT?

When the DAT (digital audio tape) standard was finalized in 1986, it was optimistically expected that the small digital cassette would join the already successful CD on its journey into the bright all-digital future. Its inventors hoped that, at best, DAT would equal the CD's mushrooming sales figures, or, at worst, take a bite out of analog cassette sales. But by the time DAT was launched in 1987, it was already in big trouble. Even though DAT offered exactly what many consumers wanted (high-quality consumer digital recording), it also offered exactly what record labels did *not* want (high-quality consumer digital recording).

To appease the recording industry, the first DAT decks were crippled so that they could record CDs only via an analog connection. Although the Audio Home Recording Act and the Serial Copy Management System (SCMS) later provided a very reasonable compromise, the confusion and controversy surrounding the launch, coupled by the gear's high price, doomed DAT as a consumer format. In the end, DAT dramatically underperformed even the worst-case sales projections.

Still, DAT's ability to make bit-for-bit digital "clones" was exactly what audio professionals and semi-pros were looking for. Their interest revived the format, consumer DAT decks were hastily retooled for pro use, and DAT found a new home in recording studios large and small. Over the years, DAT has evolved into a solidly established niche format, especially in the guise of "pro" recorders without SCMS limitations. Although it never entirely lost its consumer limitations and is often criticized for its sometimes iffy reliability, DAT lives on, perhaps dreaming, deep in its silicon heart, of what might have been.

— K.P.

Price ¹	Optical Digital Inputs	Coaxial Digital Inputs	Optical Digital Outputs	Coaxial Digital Outputs	Analog Line Input	Microphone Input	Analog Rec-Level Control	Headphone Jack	Headphone Level Control	Auto/Manual Track Marking	Remote Control	Special Features
\$850	1	1	1	1	✓	—	✓	✓	✓	✓	✓	CD-R/RW recorder.
\$650	0	1	0	1	✓	—	✓	✓	—	✓	✓	Dual-tray CD player + CD-R/RW recorder. Bit-accurate recording. Double-speed dubbing.
\$650	1	1	1	1	✓	—	✓	✓	✓	✓	✓	CD-R/RW recorder. 3bit-accurate recording.
\$550	0	1	0	1	✓	—	✓	✓	—	✓	✓	CD-R/RW recorder. 3bit-accurate recording.
\$2,000	1	1	1	1	✓	—	✓	✓	✓	✓	✓	CD-R recorder. Bit-accurate recording. One-touch synchro recording.
\$1,699	1	1	1	1	✓	—	✓	✓	✓	✓	✓	CD-R recorder. Bit-accurate recording. Digital synchro recording.
\$699	1	1	1	0	✓	—	—	✓	✓	✓	✓	CD-R/RW recorder. 3bit-accurate recording. Digital noise reduction on analog inputs.

¹ Manufacturers' quoted prices.

Fortunately, CD-RW machines also accept the cheaper CD-Rs, so you can make "write-once" recordings as well.

Like CD-Rs, a CD-RW recording must be "finalized" before it can be played in a CD-RW-compatible player. Once a CD-RW is finalized, the entire disc has to be erased before you can do any further recording (single tracks can only be erased *before* the disc is finalized). Whereas CD-Rs can be played in most conventional CD players, CD-RWs cannot because they have a different (lower) reflectivity characteristic. However, "multiread" players that can handle CD-RWs are expected to be common in the future.

MiniDisc Introduced by Sony in 1992, MiniDisc (MD) is an erasable format that uses a 2½-inch disc housed in a protective caddy that resembles a downsized 3½-inch computer diskette. Whereas CD-R and CD-RW recorders store digitized music in linear PCM fashion (like regular CDs), the MD format uses a data-compression system to squeeze 74 minutes of stereo music onto the small discs, which sell for \$5 to \$7. Known as ATRAC, the system employs a psychoacoustic model to eliminate portions of the music that are masked by other portions or otherwise deemed inaudible. This is a radical concept, but psychoacoustic data compression is widely and successfully used to encode both the audio (Dolby Digital) and video in DVDs and digital satellite broadcasts, as well as in the forthcoming digital TV system.

Although the ATRAC algorithm has been steadily improved since MiniDisc was first introduced, an MD recording does not sound quite as good as the CD version in critical listening comparisons. Still, MD is exceptionally well suited for portable applications, which is why you'll find a number of portable models in our table. Since music data from an MD flow directly into a memory buffer, the format is inherently resistant to shock or vibration during playback. This helps prevent audible gaps if the player is jarred during jogging or some other mobile activity.

Compared with CD-RW, MiniDisc is more flexible in terms of editing. In addition to being able to record up to 255 tracks on an MD (compared with CD's 99), you can delete, combine, move, and divide tracks after they are recorded. Although the recorded data are not physically moved or altered, they can be addressed in innumerable ways by simple user-designated pointers. Just as data files can be stored in tiny fragments at various points on a computer floppy or hard disk, you can rearrange an MD's contents to your heart's content. MDs are therefore easier and far more forgiving to record than CD-Rs or CD-RWs. First-generation CD-RW recorders don't offer much editing flexibility, but this may improve with future generations. For now, if you make a mistake, it's a lot easier to fix it on MD.

Another advantage of the MiniDisc format is the ability to label recordings with disc and song titles, artists' names, and other information that is displayed

during playback. Typical MD recorders can hold 1,700 or so characters — plenty for most folks. Many also let you make mono recordings so that you can fit 2 hours and 28 minutes of audio onto a single disc, terrific for dictation or recording interviews.

There is one area where CD recording decidedly has the upper hand over MD: If you buy a CD-R or CD-RW recorder, there's a vast universe of prerecorded CDs that you can play on it in addition to the recordings you make. If you buy an MD recorder, however, you'll find that the supply of prerecorded software is extremely limited because the U.S. recording industry never embraced the format, probably fearing its recording prowess. And, of course, you cannot play MDs in a CD player. People often ask why Sony didn't make MD more like CD, with a big disc, no data compression, and CD compatibility. The answer (I think) is that MD was intended mainly for portable use. If you think portable CD players are too bulky and CD recorders and blanks too expensive, MD makes sense.

PC or Not PC? CD-R/RW and MiniDisc are still niche markets in traditional stereo circles, but CD-R/RW is a mushrooming phenomenon in computer circles. Perhaps 200 million blank computer CD-Rs were sold worldwide last year, and because of their low cost (a buck or so), the format is sometimes called a digital Kleenex — a disposable, temporary place to put a few hundred megabytes.

However, most of the 120,000 terabytes (*billions* of bytes) of data written to CD-R last year were nonaudio bytes. While it is simple to drag and drop nonaudio files to CD-R (and CD-RW), it is somewhat more difficult to write audio files to make a standard (Red Book) CD. It is all too easy to wind up with a stack of gold-plated discs that are useful only as coasters, assuming that you think a coaster with a hole in its center is useful. On the other hand, PC-based CD recorders are cheap, and they are also fast — four or six times the speed of most audio CD recorders, the exception being the Philips CDR 765, which has a double-speed dubbing mode (see page 64). If you and your computer are up to it, PC-based CD-R and CD-RW recording is a powerful way to “burn” your own music.

Waiting for Recordable DVD Now that the DVD-Video format is becoming established, and DVD-Audio is just over the horizon, some folks might argue that CD-R/RW will soon be passé. After all, a single-layer DVD holds as much data as seven CDs. Maybe you should wait and buy a DVD recorder instead? The answer is a definitive “maybe.”

In addition to playback-only DVD-Video, DVD-ROM, and DVD-Audio, the DVD standard calls for write-once DVD-R (recordable) and rewritable DVD-RAM (random-access memory) formats. Both DVD-R and DVD-RAM are now available. Like the first CD-R/RW recorders, the first DVD-R recorder is a professional unit aimed at developers; it costs a cool

\$17,000. Consumer versions should appear soon — perhaps next year — for about \$1,000. The first DVD-RAM drives were priced at about \$800.

A number of other recordable-DVD formats are also under development. Here’s the catch: they’re all intended as computer peripherals. Moreover, because DVD-Video (and DVD-Audio) discs are encrypted, you cannot digitally copy their contents to a DVD-RAM drive. Bottom line: For the foreseeable future, DVD recorders will be computer peripherals, not home-audio components. They are great for mass data storage. However, that still leaves open the important application of time-shifting TV broadcasts. I suspect we will see DVD recorders for that purpose in a few years, possibly replacing VCRs. Of course, by then, everyone will be clamoring for high-definition-digital-TV recorders, and even the capacity of DVD is insufficient for that.

Investing in one of today’s technologies, instead of waiting for future generations of digital recorders, makes sense when you consider that CD and MD recorders are available now, and at affordable prices. You’ll soon discover why devotees of home recording find playback-only machines to be unfulfilling devices. They argue that at least half the fun of recorded music is making it yourself. Yes, it takes time and energy to create that ultimate compilation disc. But for many music lovers, there is nothing greater than the satisfaction of hearing music their way. Besides, no one ever said nonconformity was easy. □

Die, Cassette, Die!

It’s ironic. Audio manufacturers spend fortunes to develop new music formats, only to see them fail. The analog cassette was never intended to record music at all when Philips introduced it in the early 1960s, yet it went on to become the dominant music format until it was finally surpassed by the CD in the early 1990s. Originally intended for office dictation, the lowly cassette underwent incredible improvements, yielding a formidable recording format that is cheap, portable, and can provide very good sound quality. After listening tests I conducted last year (see “Format Fisticuffs,” March 1997), I concluded that an analog cassette recording made with Dolby S noise reduction sounded slightly better than the same material recorded on MiniDisc.

Still, cassettes are a hassle. Tape is decidedly *not* random-access, it is prone to breaking, and it wears out after repeated playings. Moreover, today’s world embraces everything digital, and the cassette is unfashionably analog. CD-R, CD-RW and MiniDisc will slowly erode cassette sales, but, try as they might, it will be many years before they finally succeed in killing off the cassette.

— K.P.

MiniDisc Recorders

Manufacturer	Model
AIWA 800 Corporate Dr. Mahwah, NJ 07430 800-289-2492 www.aiwa.com	XR-MD90
	XR-H66MD
	XR-H33MD
	CSD-MD5
DENON 222 New Rd. Parsippany, NJ 07054 973-575-7810 www.del.denon.com	DMD1000
JVC 41 Slater Dr. Elmwood Park, NJ 07407 800-252-5722 www.jvc.com	XU-301BK
KENWOOD P.O. Box 22745 Long Beach, CA 90801 800-536-9663 www.kenwoodusa.com	1090MD
	1050MD
	DMC-J7R
PIONEER 2265 E. 220th St. Long Beach, CA 90801 800-746-6337 www.pioneerelectronics.com	Elite MJ-17D
	MJ-707D
SHARP Sharp Plaza Mahwah, NJ 07430 800-237-4277 www.sharp-usa.com	MD-X8
	MD-X7
	MD-X5
	MD-R3
	MD-MS702
	MD-R2
SONY One Sony Dr. Park Ridge, NJ 07656 800-222-7669 www.sel.sony.com	MDS-JA3ES
	DHC-MD515
	DHC-MD500
	MDS-JA20ES
	ZS-M7
	MDS-JB920
	MZ-R50
	MDS-JE520
	MDS-S39
	MZ-R30
MDS-JE320	
YAMAHA 6660 Orangethorpe Ave. Buena Park, CA 90620 800-492-6242 www.yamaha.com	MDX-793

SHOPPING MADE SIMPLE DIGITAL RECORDERS

Price ¹	Optical Digital Inputs	Coaxial Digital Inputs	Optical Digital Outputs	Coaxial Digital Outputs	Analog Line Input	Microphone Input	Analog Rec-Level Control	Headphone Jack	Headphone Level Control	Auto/Manual Track Marking	Remote Control	Long-Play Mono Recording	Special Features
\$850	1	0	1	0	✓	—	—	✓	—	✓	✓	✓	AM/FM/CD minisystem. High-speed playback.
\$700	1	0	1	0	✓	—	—	✓	—	✓	✓	✓	Minisystem with 3-CD changer and 5-MD carousel.
\$600	1	0	1	0	✓	—	—	✓	—	✓	✓	✓	Minisystem with 3-CD changer. High-speed playback.
\$525	0	0	0	0	—	—	—	✓	—	✓	✓	✓	Boombox.
\$599	2	1	1	0	✓	—	✓	✓	✓	✓	✓	✓	
\$550	1	0	1	0	✓	✓	✓	✓	—	✓	✓	—	3-disc CD changer. Text Compulink. CD pitch control. CD line and mic mixing.
\$600	1	2	1	1	✓	—	✓	✓	✓	✓	✓	✓	Digital recording-level control with auto fader. 24-bit A/D and D/A.
\$400	1	1	1	1	✓	—	✓	✓	✓	✓	✓	✓	Music scan. Instant track access.
\$400	1	0	0	0	✓	✓	✓	✓	✓	✓	✓ ²	✓	Portable. Bass-boost. LCD watch-style remote control.
\$800	1	1	1	0	✓	—	—	✓	✓	✓	✓	✓	Copper chassis. Aluminum front panel.
\$399	1	1	1	0	✓	—	—	✓	✓	✓	✓	✓	Advanced parameter processing. Digital noise reduction for analog inputs.
\$800	1	1	0	0	✓	✓	✓	✓	—	—	✓	✓	Minisystem. 3-CD changer. Internet recording option. External-keyboard input.
\$650	1	1	0	0	✓	✓	✓	✓	—	—	✓	✓	Minisystem. 3-CD changer.
\$500	1	1	0	0	✓	—	✓	✓	—	—	✓	✓	Minisystem. External keyboard input. Phono input.
\$500	1	1	1	0	✓	✓	✓	✓	✓	—	✓	✓	100-character title for track/disc naming.
\$400	1	0	0	0	✓	✓	✓	✓	✓	✓	✓ ²	✓	Portable. Sound and mic synchro recording.
\$350	1	1	1	0	✓	—	✓	✓	✓	✓	✓	✓	Sound synchro recording. 100-character title for track/disc naming.
\$1,200	1	1	1	0	✓	✓	✓	✓	✓	✓	✓	✓	1,700-character text entry. CD-synchro recording. 5-year warranty.
\$800	0	0	0	0	✓	—	✓	✓	—	✓	✓	✓	Minisystem with 3-CD and 3-MD changer.
\$700	1	0	1	0	✓	—	✓	✓	✓	✓	✓	✓	Minisystem with 3-CD changer.
\$700	2	1	2	1	✓	✓	✓	✓	✓	✓	✓	✓	CD-synchro recording. Pitch control. 5-year warranty.
\$650	0	0	0	0	—	—	✓	—	—	✓	✓	—	Minisystem. One-touch CD to MD digital synchro recording.
\$480	2	1	2	1	✓	—	✓	✓	✓	✓	✓	✓	CD-Text transfer. Pitch control. Digital fade-in/out recording.
\$450	1	0	0	0	✓	✓	✓	✓	✓	—	✓ ²	✓	Portable. Digital bass boost.
\$360	1	0	1	1	✓	—	✓	✓	✓	✓	✓	✓	Digital fade-in/out recording. 2-line display.
\$360	1	0	1	0	✓	—	✓	✓	✓	✓	✓	✓	Compact size to match minisystems.
\$349	1	0	0	0	✓	✓	✓	✓	✓	—	✓ ²	✓	Portable. Digital bass boost.
\$250	1	0	0	0	✓	—	✓	—	—	✓	—	✓	
\$699	2	1	1	0	✓	—	✓	✓	✓	✓	✓	✓	4-second-memory recording buffer.

¹ Manufacturers' quoted prices. ² Remote control on headphone cord.



Send in the

Philips CDR 765 CD Dubbing Recorder

I THOUGHT I'D NEVER LIVE TO SEE THE DAY. With the Philips CDR 765 we finally have the CD equivalent of the dual-well cassette deck — a single audio component that, at the touch of a couple of buttons, enables digital copying from a CD to a write-once CD-R or an erasable CD-RW. This has been the dream of those of us who've wanted to create our own favorite-

track compilation CDs the way we have always been able to do with cassettes.

With the CDR 765 you get, on one chassis, two CD players mounted side by side, each capable of playing finished CD-Rs and CD-RWs as well as normal CDs, and each with its own set of play and cue/scan controls and a track/time readout in the central display. But the player on the left can also record from the neighboring player or an external digital source (via its optical and coaxial digital inputs), or from an external analog source (via its line-level input). The rear panel also contains, for both player and recorder, coaxial digital outputs and analog line-level outputs.



BY DAVID RANADA

Clones

As the manual puts it, when used only as a player the CDR 765 is a "two-disc changer." Load two discs, and when one ends the other will start after a short pause (less than 3 seconds). You can also "split" the unit into two independently controllable CD players with separate analog and digital outputs, in case you want to listen to one CD as you dub a second one to tape or MiniDisc. Like most CD players, each side of the CDR 765 has a programmed-playback mode (for up to 30 tracks), repeat modes (track, disc, program), and random playback. But all of these features are of secondary interest compared with its primary recording modes: dubbing from an analog or digital external source and high- or normal-speed dubbing from the companion player.

PHOTO BY RALPH MASULLO

Dubbing External Sources

Recording from an external analog source (like a cassette deck) is assisted by front-panel level meters and recording-level controls that adjust the analog input gain in 3-dB steps from -3 to +6 dB. Most analog sources should be able to drive the recorder to full level with this range of gain, with the possible exception of some battery-powered portable equipment.

When using the analog input, you have the choice of automatic or manual track marking. With the former, the recorder will place a track marker at the start of any loud passage that follows 3 seconds or more of relative "silence." I found that the signal didn't have to be all that quiet to trigger automatic track marking (below

special test report

-37.5 dB was enough), which may introduce unwanted tracks in recordings of music with a wide dynamic range, particularly classical material. It did this several times with the first movement of Beethoven's Ninth Symphony. But you can always switch the recorder into manual mode, which allows you to insert track markers wherever you need them — Ludwig van B. would be pleased. Manual

January contained a sampling-rate converter allowing it to copy signals at the 32- and 48-kHz sampling rates typically used by DAT decks, the CDR 765 is not designed to operate at those two rates. I was able to force it to record audio data coming in at 32 and 48 kHz, but when I played the recordings back, the pitch of the music was transposed and either sped up or slowed down by the exact ratios be-

or a programmed track sequence at twice the normal playing speed. Load the source and the blank discs, program a track sequence (if desired), and hit two buttons. What could be simpler?

It all sounds very appealing, and if you just want a straight-through copy of a typical pop-music CD, it'll do just fine. But since this mode copies on a track-by-track basis, it inserts brief pauses between

THE PHILIPS CDR 765 CD RECORDER CAN MAKE BIT-PERFECT COPIES — CD "CLONES" — IN ALL OF ITS DIGITAL DUBBING MODES.

mode requires paying close attention to the music during recording, however, as once you enter a track marker it cannot be moved (though with a CD-RW you could delete the entire track and try again).

When recording from an external digital source — like another CD player, an MD player, or a DAT machine playing a tape recorded at the CD-standard 44.1-kHz sampling rate — you can also choose between automatic and manual track marking, but in this case the automatic mode simply duplicates the track increments in the source recording.

A sub-mode of digital recording that Philips considers important enough to merit a front-panel button is synchronized recording from an external CD player, otherwise known as CD-Sync. This is supposed to simplify CD dubbing — recording begins automatically when you start the external player. But I found that CD-Sync's peculiarities made it less versatile and more prone to mishap than the kind of "unsynchronized" external digital recording described above. First, if you deliberately start the source in the middle of a track, CD-Sync won't start recording until the next track comes along. Second, and more important, CD-Sync won't start until it recognizes a digital signal, which can take as long as 200 milliseconds. As the manual warns, "the very beginning of the music may sometimes not be recorded." Ludwig van B. would not be happy.

With or without CD-Sync, the external digital recording mode operated correctly only with digital signals recorded at the 44.1-kHz sampling rate. While the Philips CDR 870 CD recorder we reviewed last

tween 44.1 kHz and the other two sampling rates. In other words, Beethoven's D minor — and everybody else's, too — might come out as F-sharp minor.

Internal CD Dubbing

Now for the main event: copying CDs from the CDR 765's built-in second CD player. There are two modes for this. High-speed dubbing copies an entire CD

tracks. Of course, these half-second gaps are enough to screw up continuous musical works like the Beatles' *Sgt. Pepper's Lonely Hearts Club Band* or Madonna's *Ray of Light*, not to mention most Romantic and contemporary operas.

Furthermore, at least with our very early sample, the high-speed recording mode was a bit unpredictable, refusing to operate with discs containing many short tracks — including such test-disc warhorses as Sony's classic *Test CD 3* (YEDS 7) and Philips's own *Audio Signals Disc 1* (SBC429), both of which contain the CD-format maximum of 99 tracks, as well as our own in-house test CD-R with its 73 computer-generated tracks. And sometimes high-speed dubbing didn't work with normal music discs having far fewer tracks. There seemed to be no sure predictor for success other than trying and, sometimes, trying again. This is where having at least one erasable CD-RW comes in handy, so that you can make a test recording.

Philips has assured us that we encountered these problems because the internal software of our pilot-production player was only about 80 percent complete. I guess that's the price we paid for being first! Buyers should not experience such problems with the final production version of the recorder.

The CDR 765's normal-speed dubbing mode, which operates in real time, worked fine. No half-second gaps are inserted between tracks as long as the tracks you are copying are consecutive. But in normal-speed dubbing you can copy only one track or programmed track

HIGH POINTS

Bit-perfect "clone" copies.

Mostly easy to use.

Excellent for making compilation discs.

LOW POINTS

Hard to copy entire discs.

Misbehavior with pre-emphasized CDs.

No sampling-rate conversion.

FAST FACTS

KEY FEATURES

- Copies CDs onto CD-R or CD-R/W discs
- Can dub CDs at twice playing speed
- Record and play sections can be used separately or linked

DIMENSIONS 17½ inches wide, 3½ inches high, 12 inches deep

WEIGHT 8¾ pounds

PRICE \$650

MANUFACTURER Philips, Dept. SR, 64 Perimeter Center E., Atlanta, GA 30346; phone, 800-531-0039; Web, www.philips.com

IN THE LAB

sequence at a time. That's great for producing custom compilations of single tracks, not so great if you want to copy more than one track from a disc, or an entire disc, because to do so you have to program a track sequence. While this quirk is somewhat bothersome with a typical pop CD, it can be downright exasperating with an operatic disc containing, say, 30 tracks. (This is where the CDR 765's external digital recording mode really comes into its own — no added gaps, no programming needed.)

Now, let's say you're making a digital dub using the built-in player and the recorder encounters a track of copyrighted audio data that was previously dubbed (the notorious copy-of-a-copy situation that gives nightmares to the record industry). The Serial Copy Management System (SCMS) in the recorder will prevent a digital dub from proceeding. But the CDR 765 will continue recording. The new dub will be made through the analog domain using an internal link between the player's digital-to-analog (D/A) converters and the recorder's analog-to-digital A/D converters. This feature entails a small, and in most cases inaudible, loss of signal quality because of the D/A and A/D conversions. The automatic switch to the analog domain occurs in both normal and high-speed dubbing modes. In the latter the speed will drop to normal for the duration of the copy-protected track.

A Perfect Game

The previous Philips CD-RW recorder we reviewed was unable to make a bit-perfect copy even of a CD because its sampling-rate converter operates even when it isn't needed. The CDR 765, on the other hand, has no sampling-rate converter and makes bit-perfect copies in all of its digital dubbing modes (external, normal-speed internal, and high-speed internal). I was able to verify this by copying tracks from DTS- and HDCD-encoded discs. Any deviations from perfect "clone" copies will disrupt the decoding of either system, especially with DTS. Copies of DTS and HDCD discs I made with the CDR 765 all decoded successfully! The CDR 765's analog-input performance wasn't perfect (it couldn't be anyway), but it was still very good, on par with a good DAT recorder. It far exceeded the performance necessary for audibly perfect copies of such analog sources as LPs, radio broadcasts, and analog tapes.

The only bug — and it's more like a gnat than a cockroach — is the CDR 765's handling of those rare CDs with

RECORD/PLAYBACK PERFORMANCE, DIGITAL INPUT/OUTPUT

Bit-perfect. Digital copies made and played back on the CDR 765 will have the same measured characteristics as for CD-playback performance.

RECORD/PLAYBACK PERFORMANCE, ANALOG INPUT/DIGITAL OUTPUT

Measured from the recorder's digital output. This represents the quality of signal the recorder will lay down on a disc when reproduced by a "perfect" CD player.

Input-overload level (gain at 0).....2.43 V

Frequency response

20 Hz to 20 kHz +0.01, -0.27 dB

Noise level

(A-wtd, re -20-dBFS* input)-71 dB

Distortion (THD+N, 1 kHz)

at 0 dBFS0.038%

at -20 dBFS.....0.048%

Linearity error (at 499 Hz)

at -90 dBFS.....-0.5 dB

at -100 dBFS.....-0.3 dB

Noise modulation.....0.5 dB

RECORDER-SECTION PLAYBACK PERFORMANCE

Measured at the analog outputs.

Maximum output level

(1 kHz, 0 dBFS)1.91 V

Frequency response (20 Hz to 20 kHz)

normal+0.02, -0.43 dB

de-emphasis on+0.16, -0.74 dB

Noise level

(A-wtd, re -20-dBFS input)-75 dB

Excess noise (without/with signal)

16-bit (EN16).....+0.55/+0.55 dB

quasi-20-bit (EN20)+12.5/+12.5 dB

Distortion (THD+N, 1 kHz)

at 0 dBFS0.0049%

at -20 dBFS.....0.022%

Linearity error (at 499 Hz)

at -90 dBFS.....-0.15 dB

at -100 dBFS.....-0.2 dB

Noise modulation.....0.5 dB

Defect tracking

(Pierre Verany test disc).....2,000 μ m

PLAYER-SECTION PERFORMANCE

Measured at the analog outputs.

Maximum output level

(1 kHz, 0 dBFS)1.88 V

Frequency response (20 Hz to 20 kHz)

normal+0.02, -0.19 dB

de-emphasis on+0.15, -0.75 dB

Noise level

(A-wtd, re -20-dBFS input)-73.5 dB

Excess noise (without/with signal)

16-bit (EN16).....+1.9/+1.8 dB

quasi-20-bit (EN20)+16.6/+16.2 dB

Distortion (THD+N, 1 kHz)

at 0 dBFS0.0063%

at -20 dBFS.....0.037%

Linearity error (at 499 Hz)

at -90 dBFS.....-0.35 dB

at -100 dBFS.....-0.35 dB

Noise modulation.....0.9 dB

Defect tracking

(Pierre Verany test disc)500 μ m

* decibels referred to digital full-scale

TECH NOTES

As a plain CD player, the CDR 765 was very good, but not as outstanding in the noise and excess-noise tests as some recent DVD players (which, of course, also play CDs). As an analog-input recorder, it was similarly good, though it had a slightly higher noise level than we've seen from DAT and MiniDisc machines. As a digital dubbing machine, performance is perfect by definition since the copies are bit-accurate duplicates of the original data. There were, however, a few problems handling discs containing pre-emphasized signals (see text). All of our digital test signals were dithered, which sets limits on measured noise and distortion. — D.R.

pre-emphasis. These sometimes produced unexpected results when dubbed from the player side to the recorder side, and the recordings had greatly boosted highs in playback on the CDR 765 and other machines. Fortunately, discs incorporating pre-emphasis are becoming even more rare than they were to begin with, and they have always been less common among pop music CDs than among classical releases. If you're compiling a disc of recent pop tracks it's unlikely that you'll have any problems. When I used the external digital input for discs with pre-emphasis, the recorder handled them correctly. Philips has assured us that this

glitch, too, was software-related and has been corrected in final production units.

Despite a few minor faults — the lack of controls to easily return to the beginning of the current track and the inability to record CD index points — I really liked the CDR 765. It was faster and far easier to use than the computer CD-dubbing programs I've tried, and it's just about perfect for its primary purpose — creating compilation discs. I've already used it to make two discs of favorite test tones (Beethoven is next). The digital copies, being perfect digital clones of the originals, will sound precisely as good. Philips has a winner on its hands. □





PHOTO BY DAVE SLAGLE; DIGITAL IMAGING BY CHRIS GOULD; PULP FICTION IMAGE COURTESY MIHAMA

Triple play

COMPARISON TEST BY DAVID RANADA

Three DVD players step up to the plate

For a beginner, trying to pick a Most Valuable DVD Player might seem a daunting task. But it's actually rather easy — and fun! — especially if you watch someone go through the process first. This article looks like a triple test report, lab tests and all, but it is also intended to show you the logical sequence I used in evaluating three moderate-price DVD players. Except for the lab tests, almost everything I did to reach my conclusions can be done by a typical *Stereo Review* reader.

The Starting Lineup

We've chosen three players, two of them near twins of each other and the third the twin of a player we've already tested. Such "common sourcing" is frequent with video components as companies decide to sell equipment made by others while they establish their own in-house design teams for a new technology. It's nothing to be afraid of or to worry about. In fact, it makes life easier by reducing the number of comparisons you have to make.

The near twins in the trio are the Mitsubishi DD-2000 and the Philips Magnavox DVD 815AT. Pop open the covers, and you'll find nearly identical circuit layouts. Another dead giveaway (if one were needed) is the nearly identical appearance and operation of the players' on-screen menus. It's more difficult to redesign an on-screen menu system (or a front panel display) than to change a player's overall

appearance. And the Philips Magnavox DVD 815AT also suspiciously resembles in features, operation, and performance the Toshiba SD-3107 we tested last January (as far as I can tell without having that unit for comparison). In any case, our early sample of the Philips Magnavox came in a Philips box with a Toshiba sticker on it.

We did still have the Panasonic DVD-A310 to which I gave an excellent review in June, and it turns out that our third player, RCA's RC5510P, is its near twin. The RCA's remote control is different from the Panasonic's, and it leaves out a couple of the Panasonic's minor features, like a separate A-B repeat button. Otherwise the players are practically identical down to the rear-panel facilities and layout as well as the appearance and operation of the menu systems.

All this simplifies comparisons of the play-

PHILIPS MAGNAVOX DVD815AT

DIMENSIONS 17 inches wide, 3 $\frac{1}{8}$ inches high, 12 $\frac{1}{8}$ inches deep **WEIGHT** 7 $\frac{1}{2}$ pounds
PRICE \$450 **MANUFACTURER** Philips Magnavox, Dept. SR, 64 Perimeter Center E., Atlanta, GA 30346; phone, 800-531-0039; Web, www.philips.com



ers' video performance. Performing such comparisons *fairly* requires some care, as outlined in my "Home Theater" column (page 28). There you'll also learn why I found the video performance of these three players to be essentially identical in *normal playback*. But there were some slight differences.

Twins at Bat

During ultra-sensitive split-screen comparisons the Philips Magnavox and Mitsubishi did produce identical images (it was difficult to tell where the output of one player left off and the other started), but the greater rolloff of the RCA's luminance frequency response resulted in slightly (repeat, *slightly*) less sharp resolution test patterns. This effect was *not* visible even in direct comparisons with all the normal movie DVDs I tried, except for a very brief segment during the Michael Jordan-plays-baseball segment of *Space Jam* (Warner). The corrugated upper deck of the stadium as well as the in-field fencing appeared to be slightly less defined in the picture from the RCA player, but these scenes lasted only a few seconds. It's not reasonable to base a purchase decision on such a brief passage of a movie you may not even watch.

It may be more logical, however, to compare two players' video performance in special-effects playback, where there were definite and possibly telling differences. In still-frame and slow-motion operation, the Philips Magnavox and Mitsubishi again looked the same — and different from the RCA. This time, however, the RCA looked better. It seems to perform video filtering in the vertical direction in these modes, and as a result its im-

ages were smoother and had fewer visible pixels than those of the other two players. If you use still-frame and slow motion a great deal, then you may prefer the RCA's smoother picture.

In terms of audio performance as CD players, or as two-channel sources for Dolby Pro Logic playback of Dolby Digital soundtracks, all three players sounded the same once their output levels were matched. This should be no surprise given the generally high quality of digital audio playback nowadays, or the very good to excellent audio bench-test results from all three players (see page 73). So in audio and video performance I'd call this game a three-way tie.

Safe at Home

When it comes to operating features, the three players are not quite so similar (see "Features Checklist," facing page). The small differences in their feature complements or ease of operation just might tip the score for you. For example, all have

player also allows temporary unlocking of the rating limit. And for completely kid-safe home viewing, it has a Pro-protect Plus feature that locks the disc tray shut (with or without a disc loaded). Don't tell your kids how it works, or you might get interminable replays of *Free Willy* or, worse, *Barney's Great Adventure*.

Fortunately, there are also other, more significant features found on only one or two of these players.

Both the Philips Magnavox and RCA have a virtual-surround mode that enhances two-speaker playback of surround-encoded material. Both systems operate best when the listener is equidistant from each speaker and the speakers themselves are placed fairly symmetrically within the room (equal height above the floor is important). The Philips Magnavox effect was more vivid in my tests, though neither could match a full home-theater system with center and surround speakers in producing true theater-like sound.

Only the RCA RC5510P player has full Dolby Digital (DD) decoding with multiple analog outputs suitable for feeding the multichannel inputs of an A/V amplifier or receiver. But, like its near twin, the Panasonic DVD-A310, it is flawed in that if you set up the DD decoder for operation with "small" speakers, the high-pass filters inserted into the front left/right outputs are removed when you play a CD. This will cause a distinctly audible change in bass balance as you

MITSUBISHI DD-2000

DIMENSIONS 17 inches wide, 3 $\frac{1}{8}$ inches high, 12 $\frac{1}{8}$ inches deep **WEIGHT** 7 $\frac{1}{2}$ pounds
PRICE \$799 **MANUFACTURER** Mitsubishi Consumer Electronics America, Dept. SR, 9351 Jeronimo Ave., Irvine, CA 92618; phone, 800-332-2119; Web, www.mitsubishi-tv.com



what we call Parental Program Lockout, which lets parents prevent their kids from playing inappropriate material. The feature operates identically on the Mitsubishi and Philips Magnavox players. There's a four-digit security code controlling the selection of eight levels of lockout. RCA's

switch between DVD and CD playback from the RCA player. Such behavior only reinforces my long-held belief that it's best to ignore *any* DVD player's built-in Dolby Digital decoding and to use its digital output to feed a DD-capable amplifier or receiver.

Try as I might, I was *not* able to get the only DTS decoder I had around, the Technics SH-AC500 (see test report on page 50) to turn on DTS decoding when fed the signal from DTS's own *Demonstration DVD #2* via any of the players' digital outputs. It did turn on successfully, however, with signals from DTS-encoded CDs through the players' digital outputs, hence the "CD-only" designation on our features checklist. This behavior is puzzling (I have been able to get the same DVD to decode successfully with other players hooked to other DTS decoders), but given the absence of DTS-encoded DVDs, it's not too much of a problem regardless of where it originates.

Both the Mitsubishi and RCA players have component-video outputs, which enable the purest transfer of video signals to a monitor equipped with suitable inputs. But only the RCA player has an optical digital output. This may become significant in the future when there are many more digital sources to plug in and your system amplifier/receiver starts running out of coaxial digital inputs. Only the Philips Magnavox player has a zoom mode, which enlarges a small, selectable area of the image. The player's manual gives no suggestions as to how this would be useful, but I used it to look for video-encoding artifacts, which are enlarged along with the selected image area.

If you want to closely examine the composition and progression of movie scenes, the versatility of the RCA player's disc-drive controls may prove important. It has a wider selection of fast-scan and slow-motion speeds, and it actually does slow motion in reverse, a rather difficult feat to pull off in a DVD player. None of these players has the extremely rare feature of reverse frame-stepping, which is even more difficult because of the way the video is encoded.

All of the players' on-screen menu and setup systems operated correctly and easily (this wasn't always the case with early DVD players). But the RCA's switchable on-screen status readout is quite handy once you figure out what all the symbols mean. So if I were to base a buying decision on smooth operation and convenience features alone, the RCA would top the list, with the Philips Magnavox coming in a close second and the easily operated but comparatively scant-featured Mitsubishi coming in last. But we're not quite finished yet.

Button Hits and Errors

I've saved what turned out to be, for me, the deciding factor among these three

Features Checklist

	MITSUBISHI DD-2000	PHILIPS MAGNAVOX DVD815AT	RCA RC5510P
PLAYBACK CAPABILITIES			
DVDs	✓	✓	✓
CDs (audio only)	✓	✓	✓
CD-single 8-cm discs (rare)	✓	✓	✓
Video CD 12- or 8-cm discs (rare)	—	✓	✓
VIDEO OUTPUTS			
Composite-video	1	1	2
S-video	1	1	1
Component-video	1	—	1
AUDIO OUTPUTS/FEATURES			
Stereo (two-channel)	2	1	1
Multichannel analog	—	—	✓
Coaxial digital (PCM/AC-3)	✓	✓	✓
Optical digital (PCM/AC-3)	—	—	✓
Virtual surround sound	—	✓	✓
DTS compatibility	CD only	CD only	CD only
CONTROL FEATURES			
Picture-parameter adjustment	—	—	sharpness
On-screen setup menu	✓	✓	✓
Menu-language selection	✓	✓	✓
DVD-SPECIFIC FEATURES			
Fast-scan forward speeds	3	3	5
Fast-scan backward speeds	3	3	5
Slow-motion forward speeds	3	3	5
Slow-motion backward	—	—	5
Frame-step forward	✓	✓	✓
Frame-step backward	—	—	—
Resume playback from stop point	✓	✓	✓
Playback from memorized point	—	—	✓
Cueing by title	✓	✓	✓
Cueing by chapter	✓	✓	✓
Cueing by time	✓	✓	✓
Title repeat	✓	✓	✓
Chapter repeat	✓	✓	✓
A-B repeat	✓	✓	✓
Random playback	✓	✓	CD only
Programmed playback	✓	✓	CD only
Parental program lockout	✓	✓	✓
Picture zoom	—	✓	—
Selectable black level	✓	✓	—
Dynamic-range control	✓	✓	✓

players for last, their remote controls. The design of a remote control is an area of nearly complete engineering freedom — there are no audio or video signal-decoding standards to worry about — and has tremendous user consequences. And since the audio and video performance of these three machines in normal playback can be considered a draw, and the convenience features are essentially self-recommending (if you really need a specific feature you have to choose the player offering it), the lowly remote controls assume great importance. No sense buying a DVD player if you can't easily make it work.

All of the buttons in the Mitsubishi's remote have the same shape, size, feel, and color, and they are located in a regularly spaced array. In industrial-design circles, these characteristics would be considered primitive and non-user-friendly. Yet I found the Mitsubishi handset to

The Philips Magnavox handset was even easier to get around. At a maximum of 2 1/8 inches wide, it fit better in my smallish hand than Mitsubishi's 2 3/8-inch-wide handset. Otherwise the Philips Magnavox remote largely resembles the Mitsubishi's, with a couple of crucial differences. The Philips Magnavox's cursor controls are shaped differently from the rest of the buttons, emblazoned with easy-to-see yellow arrows, and located close to the Title and Menu buttons. Add to this the Philips Magnavox player's ability to emit a short confirming beep when it receives a remote command, and the remote becomes more enjoyable to use (the beeps can be turned off if you prefer). It was the one I was least likely to make errors with. People with wider fingers, however, may find it difficult to get around this remote reliably because the buttons are closely spaced.

All that button differentiation simply emphasizes one of the most conspicuous faults of this handset, its seeming inclusion of two sets of cursor controls. Actually, the cursor buttons are near the bottom of the handset and collectively labeled Move. What looks like another set of cursor buttons, but isn't, are controls for the volume of a TV monitor and the player's chapter/track skip buttons. But even these are rotated 90 degrees from the expected orientation, with the skip buttons pointing up and down and the volume controls left and right!

If that weren't confusing enough, RCA has seen fit to rename several buttons, abandoning what I thought was almost standard DVD terminology. What on every other DVD player I've used is called the Title button is here called Guide (initially I thought this might call up an on-screen TV-channel programming-selection guide), and the cursor button universally called Enter is here called OK — and it's located away from the cursor controls, not centered among them as usual. Return is called Go Back. And the Setup button, which you only need for installation, is located right next to the often-used Guide button and is too easy to hit accidentally.

Now, new button names are only a hindrance if, like me, you have come to expect quasi-standard terminology, or if you expect to use other DVD players, which might occasion a period of "terminological realignment." But I never got over the control layout. In its favor, and reducing the burden of two-handed operation, the RCA handset is a "universal" model with built-in coding to operate the basic controls of VCRs, TVs, DSS receivers, and even laserdisc players of different brands. But such operation might only add to the confusion, as some buttons change function when you change the component they control. In all, the one-hand-friendly, nonuniversal remote supplied with the RCA's near twin, the Panasonic DVD-A310, was considerably easier to use.

The Umpire's Call

By now the waters should be a bit clearer. The Mitsubishi DD-2000, though a fine performer, has to take second place in feature complement to the RCA RC 5510P and the Philips Magnavox DVD 815AT. And why it costs more than the Philips Magnavox, its slightly better-



be simple for my fingers (actually, just my thumbs) to navigate. Without having to shift the remote in my hand, I was able to hit nearly every control, with little chance of hitting the wrong key. Only when I used it in an absolutely dark home-theater setting did the remote's lack of button differentiation mislead me, as it is more difficult to use by feel alone.

My principal reservation about the Mitsubishi's remote instead concerns the placement of specific controls. If you do anything with a DVD other than watching straight through from beginning to end, you're going to have to push the Title and Menu buttons. These are essential when getting to the special features of movie DVDs, such as outtakes, artist biographies, trailers, and production notes. In Mitsubishi's remote, Title and Chapter are located just far enough from the main cursor buttons to require some vision-assisted stretching, especially for the left hand. In contrast, the less often used Last Play, Return, and Clear buttons are right next to the cursor buttons, where Title and Chapter could have been.

Crowded buttons are definitely not a problem with RCA's high-tech remote, which could easily win an award as the most heavily engineered of the three. In contrast to the RCA's front panel, whose same-size disc-drive buttons are easy to mix up, on the remote handset the buttons are large, widely spaced, and differentiated in size, shape, feel, and color. It's all rather spectacular to see, or to feel in a dark room (no jokes, please). Unfortunately, once you start using it, you'll probably feel that the RCA remote is better described as a case of industrial *over*design.

In short, RCA's handset was difficult and confusing to use. Probably because the designers had to fit on all the buttons at spacings suitable for typical American fingers, the remote ends up being inconvenient for single-handed operation. It's on the wide side to begin with, and if you try to use it with one hand you'll have to keep sliding your hand up and down along its length to reach different controls, much like guitarists and violinists slide their hands along the necks of their instruments.

Measurements

	MITSUBISHI DD-2000	PHILIPS MAGNAVOX DVD815AT	RCA RC5510P
DVD VIDEO PERFORMANCE (Test patterns from Sony and Dolby test DVDs using composite-video output)			
SETUP LEVEL	0/+7.5 IRE*	0/+7.5 IRE*	7.5 IRE*
100%-WHITE-LEVEL ERROR	-1 IRE	+3 IRE	+5 IRE
DIFFERENTIAL PHASE	4°	<1°	<1.5°
DIFFERENTIAL GAIN	6%	2%	0%
HORIZONTAL LUMINANCE FREQUENCY RESPONSE			
at 4 MHz	+0.1 dB	-0.1 dB	-1.5 dB
at 5 MHz	-0.54 dB	-0.1 dB	-2.3 dB
at 6 MHz	-2.66 dB	-1.4 dB	-4.4 dB
EQUIVALENT ON-SCREEN RESOLUTION	480 lines	480 lines	480 lines
* a standardized unit of contrast			
CD AUDIO PERFORMANCE			
MAXIMUM OUTPUT	1.93 volts	2 volts	2.1 volts
FREQUENCY RESPONSE (20 Hz to 20 kHz)	+0.5, -0.6 dB	+0.05, -0.3 dB	+0, -0.2 dB
NOISE LEVEL (A-wtd, dithered test signal re -20 dBFS**) normal (de-emphasis off)	-73.1 dB	-75.8 dB	-75.3 dB
EXCESS NOISE (without signal) 16-bit (EN16)	+2.65 dB	+0.25 dB	+0.25 dB
DISTORTION (THD+N, 1 kHz)			
at 0 dBFS	0.0046%	0.010%	0.0033%
at -20 dBFS	0.026%	0.020%	0.022%
LINEARITY ERROR at -90 dBFS	+0.2 dB	-0.5 dB	0 dB
NOISE MODULATION	0.56 dB	0.4 dB	<0.4 dB
DEFECT TRACKING (Pierre Verany test disc)	1,000 µm	1,000 µm	1,000 µm
** decibels referred to digital full scale			

Tech Notes

The only comparatively significant video measurements (made from the players' composite-video outputs) were of luminance frequency response. The more rolled-off response of the RCA player produced softer on-screen fine detail with test patterns, but it was very difficult to see this effect with movies.

The CD audio performance ranged from very good (Philips Magnavox and Mitsubishi) to excellent (RCA). The differences,

however, were all inaudible even with test tones, let alone actual music, played at reasonable (not louder than life) levels.

Even though I don't recommend using any DVD player's fully decoded Dolby Digital outputs, the RCA's built-in decoder produced such nice lab results as -75.2-dB A-weighted noise level and only 1.36 dB excess noise, both figures being worst-case and very good.

— D.R.

equipped near twin, remains baffling. However, if you can find the Mitsubishi at a substantial discount and aren't interested in the additional features of the Philips Magnavox or RCA, it will not disappoint you in either audio/video performance or basic usability.

If the RCA RC5510P had been supplied with a more user-friendly remote, it would probably have won this particular match-up. Its wide-ranging disc-drive controls, the greater smoothness of its image in special playback modes, and its very complete set of digital and video

outputs all score over its two opponents.

That leaves the Philips Magnavox DVD815AT. While not very different from the Mitsubishi either in performance or in features, it costs less and had the easiest-to-use remote of them all. Its audio and video performance in normal playback were fine. It would be an excellent choice as a first DVD player.

I hope you've been able to follow the reasoning that drove me to this happy conclusion. More important, I hope you can use some of the principles developed during this article for your own compar-

isons of other DVD players we haven't tested. Those principles include matched video comparisons, paying attention to the differences in normal playback (usually minimal) and special-effects playback (often quite noticeable), a close comparative rundown of the features on each player (make a checklist like ours), and extensive *hands-on* comparisons of the remote controls. If you do all that, you can expect some of the players you're considering to strike out. However, at least one will score big in your home-theater system. □

“Do you really need new speakers?”

Matt Polk, Speaker Specialist

Maybe you don't need new speakers. Maybe you do. Here are some tips on how to know whether or not it's time for a change.

Do they work right?

The first thing to check is the woofer surround – the rolled edge of the driver. If it's made of compressed foam and more than 5 years old, it may be shot. Are there any holes or tears? Gently touch the surround, if it feels brittle, stiff and ready to crumble, you need new woofers. If the surrounds are rubber they're probably perfect.

The next thing to check is whether all the drivers are making sound. Play the speakers with the grilles off. Lightly touch all the drivers to feel if they're moving. Cup your hand over the tweeter, remove it. Does the sound change? If not, the tweeter is dead. Play a solo piano recording at a moderate loud level. If you hear scratchy sound or a buzz, the midrange or tweeter may be damaged.

If you have any doubts, bring the speakers in to a local audio store and ask them to check them out. Most dealers will be happy to help.

Are you happy with the sound?

Do they sound great with all the kinds of music you're listening to today? Some speaker companies voice their speakers to sound good with certain types of music (a bad policy in our opinion). If your musical tastes have changed since you bought your current speakers, it might be time for something better. But if you're really happy with the sound – stick with what you've got.

Do they look good? Do you care?

Do your current speakers look appropriate and fit comfortably in your room? Has your significant other banished them to behind the couch? Don't laugh, I know a household where that happened. Today's speakers are generally smaller and better looking, with better performance than speakers of ten years ago.

What will you do with the money you save?

If looks and size are not an issue, if everything's working OK and you like the sound, save your dough. Buy some new CDs or a DVD player or some flowers for your partner.



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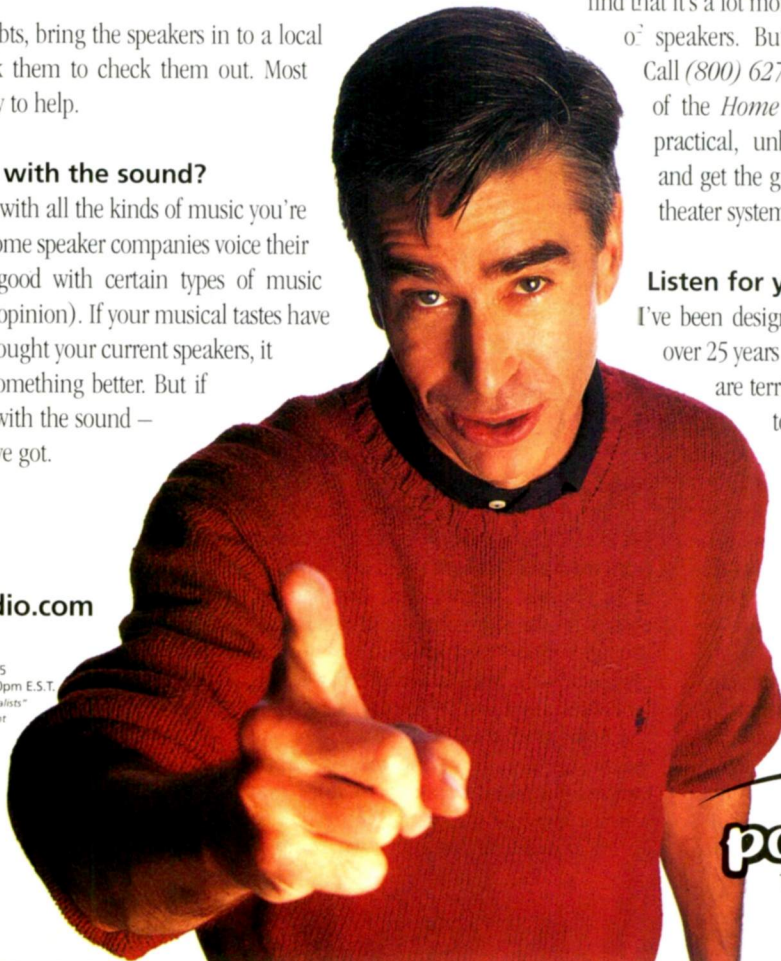
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DIVX IS HERE



Is America Ready for Pay-per-View Videodiscs?

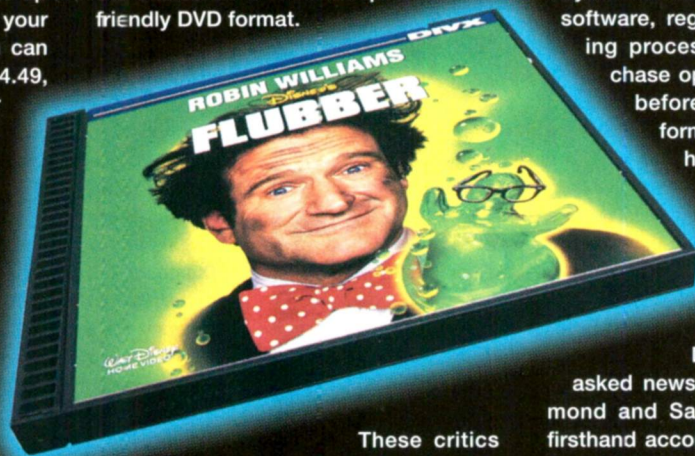
If you haven't yet heard about Digital Video Express — better known as Divx — you soon will. Circuit City launched its controversial pay-per-view DVD system in San Francisco and Richmond, Virginia, in June and plans to make it available nationally this fall.

To use Divx, you need to purchase a Divx-equipped DVD player, hook it up to a phone line, and then register your account using a credit card. You can then buy a Divx movie disc for \$4.49, which entitles you to a 48-hour viewing period, starting when you first load the disc into your player. Divx titles will initially be available only at Circuit City and The Good Guys, but it is expected that other stores will carry them soon after the national introduction.

After your initial 48 hours are up, you can either extend the viewing period at 48-hour intervals, for \$3.25 per period, or buy the disc outright, typically for about \$15 to \$20 more. If you decide you don't want to keep the Divx disc, you can throw it away. There are no "late fees" because you can't have to return the disc to the store.

It all sounds innocent enough, but Divx has been under a continual barrage of criticism from videophiles, video-rental retailers, and DVD manufac-

turers since Circuit City first announced the plan late last year. Critics contend that Divx will hurt the fledgling DVD by confusing consumers with yet another new technology before the previous one has really caught on. They also feel that the stripped-down, bare-bones Divx versions of movies could dilute the standards of the videophile-friendly DVD format.



These critics might be missing the point. Divx isn't meant for videophiles but is aimed squarely at the Blockbuster crowd — people who rent two or three movies for the weekend and don't care about a director's commentary, outtakes, an interview with the key grip's kid brother, and other supplements. All these people want is to put a disc in, hit play, and watch the movie.

Video-rental retailers might have a more legitimate beef. Divx could take business from their stores and bring it to Circuit City instead. Also, people returning rentals often browse for another title. With Divx, this incentive to return to the store is gone.

Special-interest criticisms aside, the format does have some obvious disadvantages. You can't play a Divx disc on a standard DVD player, and unless you pay extra to upgrade your disc, you can't play it on someone else's Divx player without the other person being charged. If you don't have a phone jack near your player, you either have to install one or run a wire to the nearest jack. And, while the full purchase price of a Divx disc is about the same as for a regular DVD of the same title, the Divx disc contains only the par-and-scan version of the film (formatted to fit the entire screen of a standard TV) without a widescreen letterbox option (where the top and bottom of the screen are blacked out so that the film looks like it does in the theater). It also lacks the DVD version's menus and variety of supplements.

Overall, Divx isn't as intuitive to use as VHS or DVD. The registration and payment procedure will be new to most consumers. And many people are still unaware of DVD, let alone the more elaborate Divx system. Divx, therefore, is more dependent than most products on how it is presented in the store. Buyers will need to have the hardware, software, registration process, viewing process, and rental and purchase options explained to them before they can make an informed decision. And it also has to be explained why they should spend their \$500 on a Divx DVD player rather than on a standard DVD machine.

In an effort to put Divx in perspective, we asked newspaper reporters in Richmond and San Francisco to give us firsthand accounts of how the "rollcut" was going. Their reports might not be completely representative of how Divx will perform nationally — only 50 or so movie titles and one brand of player were available in the two test markets — but they should give you a good idea of what to expect if you should venture into your local Circuit City or The Good Guys store later this year.

— Michael Gaughn

Divx's Big Splash in the Bay

by Laura Evenson

It sounded like the answer to a video addict's prayers.

"Divx gives you a simpler way of renting videos," said the salesman at a Circuit City store in downtown San Francisco. "You never have to return the movie disc, and there are no late fees." Mentally, I began to tally all the money I'd wasted on rented film classics I'd *meant* to watch but never got around to. Not to mention the hassle of returning them.

Convenience is a big part of the Divx sales pitch. That point has been hammered home during the past few months through commercials on local TV channels. The upbeat ads show a family getting drenched by the televised image of an ocean wave — a gimmick intended to drive home the realism of Divx video.

But during my visit to the San Francisco store, Divx failed to wow me with any pictures. "It doesn't seem to be working right now," the salesman explained as he valiantly jabbed at various controller buttons.

No matter. The salesman smiled and ticked off other attention-getting features: There were 400 movies out on Divx. It cost only \$4.50 to purchase a disc versus \$15 to \$20 for a DVD. Sure, you could only watch it during a 48-hour viewing period the first time, but you could start that viewing period anytime you wanted. Divx does all the work, the salesman explained. The player tracks what I watch and when I watch it, then sends the information to Divx customer service, via the built-in modem, once a week. All I need do is provide a credit-card number.

That's where the mellifluous patter began to sound tinny. Who would keep this credit-card number? "The Divx people," he said, "on computers in Virginia." And where would I find the Divx discs? "We have them, and I'm sure other places will have them soon," he said.

I ambled over to a Divx disc display, where I saw only a few dozen titles. "How many Divx movies did you say are available?" I asked the salesman. He smiled and said, "Well, there are only 40 Divx titles out now, but there *will* be 400 by the end of the year." He added that there were a lot more DVD titles — about a thousand — and that those discs play on a Divx machine even though Divx discs don't play on DVD machines. So why should I pay more for a Divx player when most of the discs I'd be buying or renting could be viewed on a DVD player? "Because the Divx discs are more convenient," he said. Exhausted by such circular logic, I headed to the competition.

The Divx players were right inside the Good Guys store, just opposite the cellular phones. Since the phones were a stronger draw with the shoppers, I had a salesman in the Divx area to myself. Like his Circuit City counterpart, he chatted about the convenience of Divx and the absence of late fees. He also pointed out that I would need an A/V receiver with Dolby Digital surround processing to get the best possible sound, since the Zenith model I was looking at didn't have a built-in surround decoder. But the respect I'd gained for him



The Hometown Advantage

by Gregory J. Gilligan

Circuit City is based in Richmond, so it's not too surprising that the company chose its hometown as the East Coast test market for its new Divx concept. The nationwide consumer-electronics retailer is well established here as the city's second-largest private employer. Considering all of the criticism and media scrutiny Divx has received, Circuit City apparently wanted to use a market where it could keep a close eye on the introduction.

On a midsummer weekend, the foot traffic at the Divx displays at two Circuit City stores was heavy. In one store, the Divx demonstrations were held in the home-theater display area; in another, the players were positioned next to the VCRs. A small selection of Divx discs was displayed next to the players; there was a larger display in the music department. The salespeople in both stores had a good grasp of the hardware and software and were able to answer almost all of the customers' questions. This was likely a result of both effective training by Circuit City and the extensive local media coverage that preceded the launch.

One customer, Malcolm Nunn, who had heard about Divx, headed straight for the display to find out more. He came away impressed. Nunn didn't buy a player, though, saying he would wait for the ProScan model due in the fall. "It's a good idea," he said after watching the demo with his wife and two small children. "The price and the flexibility are the real selling points. I don't want to buy a disc for \$25 and only watch it once."

Steve Thompson was one of the first people to buy a Divx player. A computer programmer, Thompson is also an avid movie buff who

has amassed a large collection of videotapes but has always been disappointed with the sound and picture quality of VHS. He also owns a laserdisc player but has been frustrated by that format's limited acceptance and by the high price of the 12-inch discs. Divx seemed like a good opportunity for Thompson to get cinema-quality picture and sound in an inexpensive, user-friendly format. "I have been champing at the bit to get one," he said shortly after buying his player.

Thompson felt it was too early to say whether Divx lives up to its billing, but he believes the system will save him time and money. He also likes it that the player is compatible with regular DVDs. After his experiences with laserdisc, he didn't want to be stuck with another obsolete machine.

"I was holding off on buying a DVD player for a long time after I heard about Divx," he said. "I wanted to make sure whatever I bought was going to be compatible with everything, and I think Divx is. With the Divx player I get the best of both worlds. I can get the Divx disc for those movies I'll watch probably once or twice and save some money over purchasing it. If I really like it, I can go buy it on DVD."

Another of the first customers, Donald DeBord, bought a Divx player to save money. "The bad thing about renting a video is you've got to remember to return it," he said. "Most of the time I remember, but there are times I don't, and I get

evaporated when he claimed that "hundreds" of Divx titles were available.

Consumers who had heard about and seen Divx at San Francisco-area outlets of both Circuit City and The Good Guys voiced reactions as varied as their occupations. These were no technology-crazed early adopters. They included teachers, construction workers, and investment bankers. Like Donald Huls, a high-school student in San Mateo, most shoppers said they liked Divx's key selling point — convenience. "I like the fact that once you have the disc, you don't have to go back to the store," Huls said.

Divx's sharp picture and clear audio appealed to Marilyn Centoni, a Redwood City retiree. But having to hook up a phone line would be anything but convenient. "We don't have a phone line in the same room as the television set," she said. "And our cupboard is just big enough to hold a VCR, no more." Debbie Dagby, a homemaker from Foster City, said she also liked the sharp picture, but added, "We tape more TV shows than we rent movies, and this Divx doesn't record anything."

While not having to return a disc or pay a late fee "doesn't sound entirely crazy," said Dan Carroll, an investment banker who heard the pitch at The Good Guys in San Francisco, he doesn't think Divx will fly. "I think DVD will become so inexpensive that you'd just buy them instead," he said. "And some of the players cost less." The 48-hour time limit on the first viewing period dissuaded Christian Svensson, a video-games journalist who also heard about Divx at The Good Guys. "It's sort of like being on the clock," he said.

Consumers who had actually purchased a Divx player were more positive about the system. Arlene Baisa, an executive administrative assistant who bought her player at a San Mateo Circuit City store, said she and her husband like the idea, "because we like to own movies instead of renting." Divx's picture quality "is very sharp and the color is much more vivid than anything I'd seen on TV," she added. But she's disappointed by the small selection of movies.

The crystal-clear quality of the audio sold Jeff Crothers, a plasterer from Belmont, on the Divx system. "The crispness of the picture also is pretty tough to beat," he said after buying his player at the San Mateo store. But it took two hours to hook up because he had to integrate it into an existing home-theater system. "My best advice to people is to read the directions thoroughly before you start," he said.

Peter Mesbah, a life-insurance salesman who purchased his Divx player at a Circuit City store in San Francisco, paid a cable-TV installer extra to hook it up in his Oakley home. The investment paid off. "The difference in sound between this and a VHS tape is like the difference between a cassette tape and a CD," Mesbah said. "And the picture is very clear. It doesn't jump up and down, like you see on a VCR."

He has yet to play a Divx disc, however. "Hollywood Video is closer to my home than Circuit City or The Good Guys, so that's where I go," he said. Mesbah wonders if the scarcity of Divx vendors will turn the format into next year's Betamax. "So far, all I've watched are DVDs."

Laura Evenson writes about technology and entertainment for The San Francisco Chronicle.

stuck having to pay the late fees." DeBord was also attracted to Divx's flexibility. "When I go to Blockbuster, I only get one video to rent because the time starts ticking as soon as I leave the store," he noted. With Divx, you can watch the movie anytime after you purchase the disc — the same day, or weeks or months later.

DeBord reported no problems with player setup and use.

His only complaints — ones echoed by many other early Divx buyers — are that there aren't enough movie titles, he can only buy the available titles through Circuit City, and few of those titles are current releases. "There just aren't enough Divx movies out," said Tom Bast, general manager of the local ABC affiliate and another of the first Divx customers. "That's something they need to work on."

Not everyone in Richmond is impressed with Divx. Kyle Morris, a sophomore at James Madison University, saw a Divx display at a local mall and decided to check it out for himself. "All it is is a way to trick the consumer and for Circuit City to make more money" he

said. Morris called it "absurd" that you can't play a Divx disc on a friend's player without the friend being charged. He's also concerned about privacy. Digital Video Express knows what you're watching and when. "That's scary," he said.

Gregory J. Gilligan, retail reporter for The Richmond Times-Dispatch, has covered Divx since it was first announced.



Is Divx Ready to Roll?

Divx spokesman Josh Dare feels the rollout has been going well despite the negative publicity. "We're very encouraged by consumer reaction to the launch of Divx in these two markets," he told us. Dare did say, however, that early complaints about the lack of software titles and of being limited to the Zenith player are "fair" criticisms.

"Thomson will have its RCA player available for the national rollout," Dare said. "We'll be able to supply all of the stores with players — not only Circuit City and The Good Guys, but every retailer who's signed up will have hardware." Players from ProScan and Panasonic will be available later in the fall. "So we'll have four players by the holidays," he said. Digital Video Express hoped to have 150 movie titles available for the national rollout, but it was unclear at press time whether the company would be able to meet that goal.

"The biggest problem we have right now is people outside of the test markets who want information," Dare explained. These folks have been finding that sales staffs don't know much more about Divx than they do. "We're training salespeople to address that right now," he added.

Divx didn't evoke the same ire among consumers in the test markets that it did in the videophile press and among DVD manufacturers before the launch began. Chances are, if Circuit City continues to target Divx at the average wide-area renter and steers clear of the videophile crowd as it goes national, the sternest criticism could come from consumers who, facing software-meager displays, want to know, "Where are the movies?"

— M.G.



PHOTO BY RALPH MASULLO



MULTIMEDIA SPEAKER SOUND-OFF

Tired of listening to those throwaway boxes that came with your PC? Give one of these systems a try.

Remember when personal computers had green screens and made no noises other than a few beeps? Boy, how times have changed! PCs have become increasingly outspoken. Every new one is outfitted with a sound card, and practically every piece of software has sound associated with it, even if it's just a pleasant start-up chime. The quality of computer sound has gotten better, too. Most games now have

three-dimensional (3-D) audio, and sound-editing software like SoundForge and CoolEdit can turn your desktop computer into a mastering studio.

All these trends make it more important than ever for your computer to have a good set of chops. So we asked some of the major players to send us their best-sounding multimedia speaker systems. The contenders, in alphabetical order, are the Advent Powered Partners AV390PL, Altec Lansing ADA310, Aura Aspect 20/40, Bose MediaMate, Boston Acoustics MediaTheater, Cambridge SoundWorks MicroWorks, and JBL MediaSystem 2000.

The Bose MediaMate is the only two-speaker system in the group. The others are three-piece systems consisting of a pair of desktop satellites and a bass module designed to be placed on the floor, on the desk, or perhaps hung on the wall. Each system comes with all the wires and connectors needed for a computer installation. They're all powered speakers with built-in amplifiers, so you could use them

not only with a PC but also with a portable CD player or any other audio source component with line-level outputs.

Testing, Testing

For measurements and sound-quality testing I set up each system in turn on an empty computer table (30 inches wide, 24 inches deep, and 26 inches high) that was flush against a flat wall. The test environment was fairly representative of a typical multimedia-PC setup. I placed each pair of satellites on the tabletop 16 inches apart and 10 inches back from its front edge. The bass modules were each placed on the right side of the table against the rear wall.

For measurements, I placed a microphone on a chair at the height of a seated listener's ears and 21 inches out from the front plane of the satellites. I balanced the systems for flattest frequency response, measured at six different microphone positions and averaged, using my MLSSA analyzer. I measured each system's maximum output with no more than 10 per-

BY TOM NOUSAINÉ

cent distortion over its low-frequency operating range to determine its effective low-end cutoff. I also measured the maximum clean sound-pressure level (SPL) that each system could produce without any sign of speaker overload while playing "Little Brown Jug" by the Glenn Miller Orchestra, a big-band recording with pounding bass and screaming horns (see "Recordings Used" below).

Following the measurements, I conducted a detailed listening analysis of each system to assess spectral uniformity, imaging, and dynamics, using my everyday 5.1-channel home-theater system, located in the same room, as a reference point. Programs included standard and Dolby Surround-encoded two-channel stereo recordings and specially encoded "3-D" audio programs. In particular, I used the Dolby Labs "Train" trailer, which begins with a series of bells that cycle around the channels one at a time, both from the Delos *DVD Spectacular* disc and from a noncommercial demo CD using AuReal 3-D processing. I also used the Finnish *Surround Testi* CD, which has an excellent 3-D audio track where a fly buzzes around and into the face of the listener with startling reality — it can make you duck! The track also features a stream running to the right and a cicada singing high and to the left.

It might seem strange to use test recordings, music, and movie soundtracks to evaluate these systems — after all, you probably don't use your computer speakers to listen to music. However, I used them because they're all much more difficult to reproduce than typical computer sounds — even those from the best game

and multimedia titles. Computer sound is getting much better, but compared with my test material, it just isn't very demanding. Furthermore, when you're playing a game, your involvement in the game itself tends to make it easier to accept poor sound quality. Nevertheless, after my listening analysis, I did use each system while playing games on my PC (a rather standard 200-MHz Micron with a Sound Blaster sound card) to assess its user-friendliness.

Advent PoweredPartners AV390PL

The Advent Powered Partners brand has been in the multimedia-speaker business from the beginning. The AV390PL system includes a pair of tall, wedge-shaped satellites and a large bass-reflex bass module designed to sit on the floor or hang on a wall (the cabinet includes keyhole slots).

The bass module contains the system's power supply — it has a detachable power cord, so there's no inconvenient "wall-wart" power cube or in-line "brick" with this system. System volume is controlled from the right satellite, which has a convenient push-to-mute master volume control. Even more convenient, the system shuts down automatically when it's not being fed an audio signal and powers back up when it senses an audio input.

The system has three operating modes that Advent calls DSP (digital signal processing), although not all of the processing is actually performed in the digital domain. The first is Line Straight, better known as plain 'ol stereo. Second is Enhanced Stereo, a proprietary spatial en-

hancement. Finally there's Dolby Virtual Surround, which attempts to create a Dolby Pro Logic sound field with only two speakers.

The system also has a Gaming Contour control that cuts woofer output to allow some of the bass power to be used above 150 Hz, where it's most needed for computer-game soundtracks. I didn't find the contour especially useful for games, but it did serve as a convenient desktop bass control.

The Powered Partners sounded pretty close to as good as it gets in multimedia. In Line Straight mode the sound was clean and clear. Voices and acoustic instruments were presented with a natural clarity and a nice layering of detail. I heard some coloration, but it wasn't annoying or strident in character.

Spatially the system was also very good. Stereo recordings had a symmetrical, even soundstage that extended to the edge of the speakers. The stage height was about chin level, which is great for watching video, but I'd prefer it a little higher for listening to music.

On 3-D audio recordings, the system had excellent reproduction in the Line Straight mode. The reproduction of the Finnish buzzing-fly track was convincing, with natural spectral balance and a decently wide and tall sound field. In Enhanced Stereo mode, the fly sounded as if someone had coated its wings with sound-deadening material and its movement was curtailed. The ambient field had a metallic quality, too, and didn't sound natural to me. The Dolby Virtual Surround mode was better, but still inferior to Line Straight.

The system's dynamic performance was superb. Its output rivaled any other system in this comparison when the 10-percent distortion limit was applied, and it was among the best on the big-band track. The bass module had good dynamic control, playing loud and clean without noise. The satellites were the limiting factor, signaling their upper limits with rasping and tearing sounds.

In sum, the Advent AV390PL's sound quality was within sight of the best of this lot, and it has an advanced set of features. At \$180 it is clearly a great value, though its 90-day warranty seems a little on the skimpy side.

Altec Lansing ADA310

The ADA310 is the most sophisticated system I tested. Altec Lansing calls it the "Digital PowerCube DVD Speaker System with Dolby Digital Surround Sound."

RECORDINGS USED

- **Dolby Labs:** "Train" trailer (AuReal demo CD and Delos *DVD Spectacular*)
- **Duke Ellington Orchestra:** "Take the A-Train" (*Digital Duke*, GRP)
- **Gran Prix II: World Circuit Racing** (Micro Prose CD-ROM game)
- **Jedi Knight: Dark Forces II** (LucasArts Entertainment CD-ROM game)
- **Male voice recorded outdoors** (home-made recording)
- **Glenn Miller Orchestra:** "Little Brown Jug" (*In the Digital Mood*, GRP)
- **Oscar Peterson:** "You Look Good to Me" (*We Get Requests*, Verve)
- **Opus One: Depth of Soundstage** (Opus One)
- **Studio Reference Disc:** "88-Note Piano Scale" (Prosonus)
- **Surround Spectacular** (Delos): ambience clicks (Disc 2, Track 35), stepped wideband surround-sound frontal pan (Track 37), stereo pink noise (Track 41)
- **Surround Testi** (Helsinki Media HiFiCD-2, Tracks 1, 13, and 14)
- **Suzanne Vega:** "Tom's Diner" (*Solitude Standing*, A&M)
- **Jennifer Warnes:** "Bird on a Wire" (*Famous Blue Raincoat*, Cypress)
- **Rob Wasserman:** "Ballad of the Runaway Horse" (*Duets*, MCA)



Advent Powered Partners AV390PL

DRIVER COMPLEMENT

Satellite (each): 3-inch midrange, 1-inch tweeter

Bass module: 6-inch ported woofer

KEY FEATURES

Satellite (right): two mini-jack stereo inputs; left-speaker and subwoofer output; master volume control/mute switch; three-position DSP control; Gaming Contour; headphone jack

Bass module: master power switch; system power supply with output jack for satellites, detachable power cord; subwoofer gain control; stereo mini-jack signal input

FINISH beige plastic

DIMENSIONS (WxHxD)

Satellite: 4¼ x 9 x 6 inches

Bass module: 13 x 5½ x 13 inches

WEIGHT

Satellite: 2 pounds each

Bass module: 11½ pounds

PRICE \$180

MANUFACTURER InterAct, a division of Recoton, Dept. SR, 2950 Lake Emma Rd., Lake Mary, FL 32746; phone, 800-732-6866; Web, www.poweredpartners.com

Each satellite has two cone drivers — one pointed straight ahead, the other about 45 degrees to the side — providing, in effect, a main and a “surround” speaker. The bass-reflex bass module sports a front-mounted driver. The back panel contains a mini-jack stereo input and a coaxial digital input for a DVD or CD player, or another digital source. This means that a DVD with Dolby Digital 5.1-channel sound can be played back through the ADA310. Altec Lansing claims that full 5.1-channel audio is delivered to your desktop — but that’s not entirely true because there’s no discrete center channel.

Even so, the functionality of this system is just about perfect. For example, the right satellite has four controls on its top front edge: one rotary control and three pushbuttons labeled subwoofer, center, and surround. Normally, the rotary wheel is a master volume control. Press one of the three pushbuttons, and an LED above it will light, and the volume wheel will then control the level of that function — subwoofer output, for example. After a few seconds, the wheel automatically reverts to master volume. The system also has a remote control with 21 buttons, including one for muting the system.

Setup was easy enough, I just connected the input and two color-coded speaker cables that plug into the rear of the bass module. I appreciated the wartless line cord and the auto power on/off feature. The ADA310 also has a USB (Universal Serial Bus) input with audio management software (supplied on CD-ROM) that enables on-screen control of the system. However, because my PC is not USB-equipped, I was unable to use the software, but the remote control provides the same functions.

I drove the ADA310 with the analog and digital outputs of a CD player, a stand-alone DVD player, and my sound card. Its audio performance was outstanding. Spectral uniformity was excellent. Voices were clean and neutral, and acoustic instruments were defined with natural timbre.

The spatial rendition (imaging) was also outstanding. The stage was wide and could be widened substantially outside the edges of the speakers with the surround control. However, I heard some timbral alteration at extreme settings. Noise pans were smooth, with no holes. Unlike many phantom center channels, this one was quite natural in timbre and fairly “solid,” with well-defined center images.

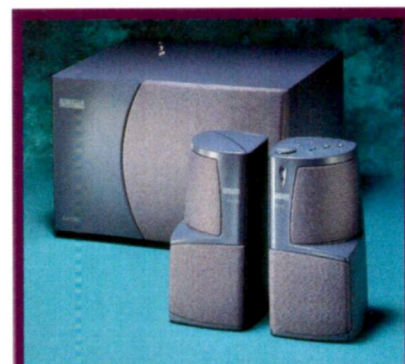
The 3-D audio effects were sometimes breathtaking. The Finnish fly had me diving for cover, and the cicada was in a tree branch hanging over my left shoulder. The Dolby trailer was not reproduced exactly as it would be in a true multichannel system, but it had better movement, more spaciousness, and more natural timbre than with any other system evaluated in this group.

Dynamics were also equal to the best. Although the woofer sometimes sounded a bit too thumpy, the system played loud and clean, with no sign of noise or untoward behavior. The big-band cut was reproduced with utter cleanliness and hard-charging energy.

The Altec Lansing ADA310 is an impressive multimedia speaker system that could double as a high-quality music-only system in a small room. And you’re gonna love that digital input. The only thing lacking was an owner’s manual that was even halfway decent.

Aura Aspect 20/40

While the Aura Aspect 20/40 is a three-piece system, both the Aspect 20 satellite and the Aspect 40 bass module can be purchased and used separately. Each satellite is a complete two-way system with a 1-inch dome tweeter and a 3-inch driver. The cabinets are medium-density fiberboard that is finished to look and feel very similar to the molded-plastic enclo-



Altec Lansing ADA310

DRIVER COMPLEMENT

Satellite (each): two 3-inch wide-range drivers

Bass module: 6-inch woofer

KEY FEATURES

Satellite: master/subwoofer/center/surround volume control

Bass module: system power supply and amplifier; Dolby Digital decoder; detachable power cord; stereo mini-jack input; coaxial digital input; USB input; power/speaker outputs to satellites

FINISH gray vinyl

DIMENSIONS (WxHxD)

Satellite: 3¾ x 7½ x 3¾ inches

Bass module: 12½ x 8 x 10¼ inches

WEIGHT

Satellite: 2½ pounds each

Bass module: 13 pounds

PRICE \$299

MANUFACTURER Altec Lansing, Dept. SR, P.O. Box 277, Milford, PA 18337; phone, 800-258-3288; Web, www.altecm.com

sure the others here use. The Aspect 20 is the largest satellite in this group, and the Aspect 40 has a tall, narrow cabinet, which makes it easy to slip under or alongside a desk.

Because the bass module can be used without the satellites, and vice versa, the system has two power supplies. The Aspect 20 uses a wall-wart, and the Aspect 40 has an in-line brick. I fully appreciate the extra flexibility in upgrading this format provides, but the dual power supplies are clumsy.

While the system could reproduce female vocals with reasonable clarity, the overall sound quality was compromised. Male voices were colored, and the whole system had a hooty, glassy quality. It was hard to find a woofer/satellite balance where the bass module could not be heard as a separate sound source. It growled at

most volume levels and rattled when driven beyond its capability.

Spatially, the Aura system gave a pretty good sense of far left and right, and it placed the Dolby Surround bells outside the main speakers. However, the center was vague, and the sound changed timbral balance when it panned across the front stage. I heard noticeable coloration when the Finnish fly was buzzing around. The basic image was low but not on the table itself. There was a reasonable sense of front-to-back stage depth. Although the Aura was capable of prodigious output, I needed a deft hand at very loud levels to avoid overload.

In sum, the Aura Aspect 20/40's price is its most attractive feature. At \$100 total it is by far the least expensive system here. While my description of its sound quality might seem harsh, keep in mind that the reference I compared it with was a high-quality home-theater system. The Aura is a basically competent multimedia speaker system that can be purchased in two steps at a price that is considerably less than those of the other systems in this comparison.

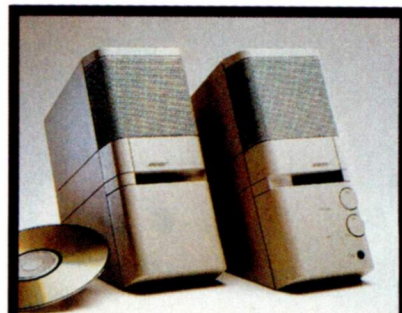
Bose MediaMate

The Bose MediaMate was the smallest and easiest-to-use system I tested. It consists of a pair of small satellites with a wall-wart power supply. The plastic enclosures contain single cone drivers with bass-reflex loading. The trim units have angled front panels.

Setup was as easy as pie — there are only three wires, including power, if you have a single source. There are, however, two input jacks; the "mix" control allows them to be blended so that, for example, you can get computer sound while listening to music. The only other operating control is volume. Both controls use a large thumbwheel that I found especially easy to operate. Compliments to Bose for advanced ergonomics.

Spectrally the MediaMate was basically neutral. The limited bass extension was seldom obvious with games or typical computer chatter. Music with a real bass line tended toward the anemic and dynamics were not the MediaMate's strong suit, but remember that this is a two-piece system with no bass module. Driven by a CD player, the speakers tended to make extraneous noises on any material with strong bass content. However, I almost never heard any noise when I used them with my computer. Overall, the system's output level was modest.

Only mild coloration was evident with music and demanding programs. The



Bose MediaMate

DRIVER COMPLEMENT (EACH)

2½-inch wide-range driver

KEY FEATURES

Right satellite: volume control; mix control; two mini-jack stereo inputs

FINISH gray plastic

DIMENSIONS (WxHxD)

3¼ x 7⅞ x 8⅞ inches

WEIGHT 2½ pounds each

PRICE \$199

MANUFACTURER Bose, Dept. SR,

The Mountain, Framingham, MA

01701; phone, 800-233-4416;

Web, www.bose.com



DAN WAGNER

Aura Aspect 20/40

DRIVER COMPLEMENT

Satellite (each): 1-inch tweeter, 3-inch driver

Bass module: 5¼-inch woofer in bandpass enclosure

KEY FEATURES

Satellite: volume/power switch; tone control; balance control

Bass module: on/off control, volume control

FINISH painted gray fiberboard

DIMENSIONS (WxHxD)

Satellite: 4 x 7½ x 8 inches

Bass module: 5½ x 10¾ x 11⅞ inches

WEIGHT

Satellite: 2 pounds each

Bass module: 6¾ pounds

PRICE \$100; also available separately (Aspect 20, \$60/pair; Aspect 40, \$40)

MANUFACTURER AuraSound, Dept. SR, 2355 Alaska Ave., El Segundo, CA 90245; phone, 800-909-2872; Web, www.aurasystems.com

soundstage appeared at nose level, which is ideal in my opinion, and was symmetrical but fairly narrow. Noise pans identified a small hole in the middle, which tended to make centered speech a little diffuse, and the mid-left and left noise bursts both appeared in the same position, directly at the face of the speaker. The same was true for movement to the right. The Dolby bells all appeared between the two speakers, and the Finnish fly had limited movement front to back.

The Bose MediaMate is small, smartly styled and easy to use. For the average computer user who wants speakers that both look good and sound okay, this will be an easy pick.

Boston Acoustics MediaTheater

The MediaTheater from Boston Acoustics has both a Dolby Pro Logic decoder and a Virtual Dolby Surround decoder built in. (An optional surround speaker is available.) I used the Virtual Surround two-speaker mode for this test. The MediaTheater system has a convenient built-in test signal that enables channel balancing without a test CD.

While the satellites are rather small, the

bass module is rather large. The controls had the smoothest action of any system in this group. They were easy to use, their labels were easy to read, and they had a classy, high-quality feel.

The MediaTheater hit the dynamic nail right on the head. The system blasted out a league-leading 105-dB SPL on "Little Brown Jug," had a measured frequency response down to 42 Hz, and kicked out an honest 50 Hz with low distortion. These are among the best dynamics in this crowd. However, as with the Advent, I could hear some distortion at maximum output in the Virtual Dolby mode.

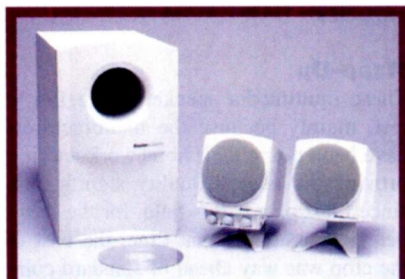
Spectrally the system was also quite good, but just a little on the heavy side. The image was low, just barely off the tabletop, but it was very wide, extending

outside the edges of the speakers. The Virtual Dolby mode widened the soundstage even further, yet it retained excellent symmetry, with a nice sense of stage depth. In all modes, the center was nicely defined.

The 3-D tracks, played back in Virtual Dolby, had an excellent sense of spaciousness, good tracking of movement, and effects that appeared to come from far outside the listening area. The Finnish fly had me ducking, and the cicada was high to the left in a tree. Interestingly, the bells on the Dolby trailer did not recirculate but appeared in both channels all the time. Perhaps the 3-D encoding confused the Virtual Dolby processor.

The MediaTheater also had a good tactile feel because of the high-output bass module. For example, the Finnish-fly track is followed by a track in which a tractor starts up and drives by. The Boston Acoustics system delivered an excellent sense of the physical vibration that you'd expect from a real tractor.

Boston Acoustics' MediaTheater is an excellent-sounding system with professional fit and finish, and a fine feature set. And its \$299 price, tied for highest in this group, reflects that.



Boston Acoustics MediaTheater

DRIVER COMPLEMENT

Satellite (each): 3½-inch wide-range driver

Bass module: 6½-inch woofer in bandpass enclosure

KEY FEATURES

Right satellite: Dolby Pro Logic/Virtual Surround decoder; master power/volume control; surround and subwoofer level controls; balance test switch; headphone jack; control output (to bass module)

Bass module: stereo mini-jack input; RCA-jack satellite output; control input

FINISH gray plastic

DIMENSIONS (WxHxD)

Satellite: 4⅞ x 4½ x 4½ inches

Bass module: 7 x 11¾ x 14⅝ inches

WEIGHT

Satellite: 1 pound each

Bass module: 7 pounds

PRICE \$299

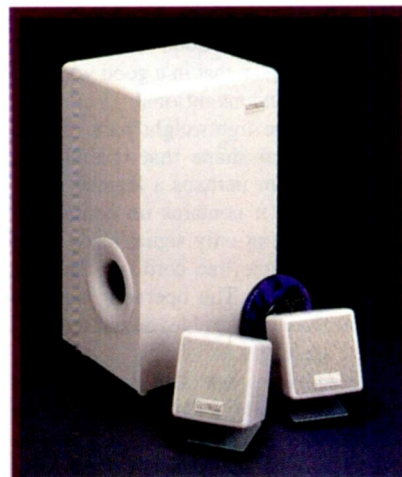
MANUFACTURER Boston Acoustics, Dept. SR, 300 Jubilee Dr., Peabody, MA 01960; phone, 978-538-5000; Web, www.bostonacoustics.com

Cambridge SoundWorks MicroWorks

The CSW MicroWorks, with its trim bandpass subwoofer and small stand-mounted cube satellites, is the smallest of the three-piece systems I tested. It's powered conveniently by a regular 120-volt line cord, though it can also be powered by 12 volts DC for mobile applications.

The 16-foot signal-input cable has an in-line thumbwheel master volume control about halfway down its length. The idea is to attach the control to the side of your monitor with the supplied hook-and-loop strips. While this is a clever idea, I found the in-line control harder to use than the satellite-mounted volume controls.

Spectrally the system had a warm, dark character with a muted treble response. The wide, low soundstage extended outside the edge of the speakers, and occasionally bass seemed to come directly from the woofer module. The surround field on the Finnish fly track was nice and diffuse, well outside the plane of the speakers. However, coloration of the nature sounds was evident, the birds were muted, and I couldn't hear the cicada. On the Dolby "Train" trailer, the surround-channel bells appeared outside the front-channel bells, just like the script says they should.



Cambridge SoundWorks MicroWorks

DRIVER COMPLEMENT

Satellite (each): 3-inch wide-range driver

Bass module: 6½-inch woofer in bandpass enclosure

KEY FEATURES

Bass module: mini-jack stereo input; speaker-level output; 12-volt power input; bass level control; master power switch

FINISH

Satellite: white plastic or black matte

Bass module: white or black vinyl

DIMENSIONS (WxHxD)

Satellite: 4 x 4 x 3⅝ inches

Bass module: 5⅝ x 8¼ x 9¾ inches

WEIGHT

Satellite: 1½ pounds each

Bass module: 7 pounds

PRICE \$249

MANUFACTURER Cambridge SoundWorks, Dept. SR, 311 Needham St., Newton, MA 02164; phone, 800-367-4434; Web, www.hifi.com

Although the MicroWorks' frequency response extended to 44 Hz, and it could play down to 62 Hz with low distortion, its overall output was several decibels below average for this group. I had to be careful with the volume level because the bass module could be driven into rattling overload.

Flexibility is the long suit of this Cambridge SoundWorks system. It can be used at the office, in the bedroom, or in your RV thanks to its 12-volt input. At home, on the road, it's all the same to the MicroWorks.

JBL MediaSystem 2000

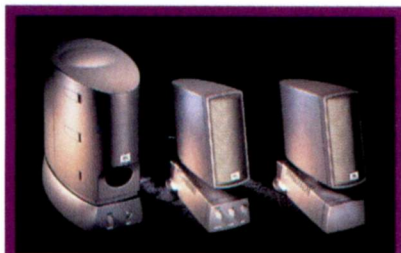
JBL's MediaSystem 2000 is, well, different — and I mean that in a good way. The styling is unconventional. Let's say "modern." The lightweight bass module has a tall oval shape that resembles a space heater, or perhaps a kitchen canister. However, it contains no controls of any kind, having only signal leads and a single detachable line cord (no dangling power supplies). The operating controls (volume, bass, and treble) are on the right satellite speaker.

The satellites are also futuristically styled. Personally I like the look. Each has a three-position swivel base that allows the face of the speaker to be pointed straight forward or angled upward by 10 to 20 degrees.

The system sounded better than the frequency-response figures suggest (see table below). The main anomaly was a deep notch at 150 Hz where the bass module crosses over to the satellites. Ignoring this area, the response was ± 4 dB from 200 Hz to 20 kHz.

Spectrally the JBL MediaSystem 2000 sounded quite natural, but there was a subtle high-frequency emphasis that accentuated recording noise and made the sound "peaky." It was hard to set the treble level — no setting seemed exactly right — because the high-frequency peaks varied with level.

Spatial rendition, however, was really good. The soundstage extended beyond the speakers, and it was full and even across the front, with a moderate sense of depth. The sonic integration of the woofer and satellites seemed perfect despite the



JBL MediaSystem 2000

DRIVER COMPLEMENT

Satellite (each): elliptical 3-inch wide-range driver

Bass module: 4-inch woofer

KEY FEATURES

Satellite: volume, treble, and bass controls; tiltable base

FINISH bronze metallic

DIMENSIONS (WxHxD)

Satellite: 2 $\frac{3}{4}$ x 7 x 7 $\frac{1}{4}$ inches

Bass module: 5 $\frac{1}{4}$ x 9 $\frac{5}{8}$ x 10 $\frac{5}{8}$ inches

WEIGHT

Satellite: 1 $\frac{1}{2}$ pounds each

Bass module: 7 pounds

PRICE \$230

MANUFACTURER JBL, Dept. SR,
250 Crossways Park Dr., Woodbury,
NY 11797; phone, 800-336-4525

midbass response notch. Performance with 3-D recordings was also excellent. Although there was some timbral shifting evident on noise pans, the performance with actual program material was out-

standing. I was sure that the Finnish fly was going to land on me! The cicada was way up in that tree, and the birds were everywhere except directly behind me. The excellent high-volume dynamics made the tractor and the Dolby "Train" trailer quite impressive, too.

The main fly in the ointment — and not the one on the test track! — was a raspy distortion that seemed to be limited to low levels. It gave bowed acoustic bass a strange papery sound that I found especially annoying. At first I thought I had damaged the satellites during output testing, but a second set had exactly the same characteristic.

So the JBL MediaSystem 2000 may not be perfect, but it's a good choice for those who like its futuristic styling and are, or will be, heavy users of 3-D audio programs.

Wrap-Up

These multimedia speakers were fun to test, mainly because the manufacturers have been doing their homework and improving the overall quality significantly since I last played this field, for the October 1996 issue. At that time, the best of the crop was way ahead of standard computer fare, but not yet truly hi-fi. The average sound quality of this new batch was considerably better. The Altec Lansing ADA310 qualifies as a high-fidelity speaker system in the true sense of the word, and the Boston Acoustics MediaTheater comes pretty darn close. But all of the systems tested here will probably blow your current PC speakers out of the water. □

LAB TESTS AND SOUND-QUALITY RATINGS

MODEL	FREQUENCY RESPONSE	BASS EXTENSION (at 10% distortion)	MAXIMUM CLEAN OUTPUT (SPL)	SPECTRAL UNIFORMITY	IMAGING	DYNAMICS
Advent AV390PL Powered Partners (\$180)	59 Hz to 20 kHz ± 6.4 dB	40 Hz	103 dB	B-	B	A-
Altec Lansing ADA310 (\$299)	40 Hz to 14.2 kHz ± 6.6 dB	50 Hz	105 dB	A-	A-	A-
Aura Aspect 20/40 (\$100)	46 Hz to 10.3 kHz ± 7.3 dB	50 Hz	104 dB	C	C	B
Bose MediaMate (\$199)	88 Hz to 16.2 kHz ± 6.2 dB	62 Hz	104 dB	B-	B-	C
Boston Acoustics MediaTheater (\$299)	42 Hz to 18.1 kHz ± 7.0 dB	50 Hz	105 dB	B	B+	A-
Cambridge SoundWorks MicroWorks (\$249)	44 Hz to 16.8 kHz ± 7.4 dB*	62 Hz	96 dB	C	B	C-
JBL MediaSystem 2000 (\$230)	42 Hz to 20 kHz ± 12.7 dB	50 Hz	103 dB	B-	B+	B-

* see text



EDWARD SMITH/RYKODISC

BEST OF THE MONTH

Bob Mould/The Last Dog and Pony Show

Bob Mould has always kept himself safely out of the mainstream, even the alternative mainstream. When his 1980s band Hüsker Dü was drawing an audience of hardcore kids, he started championing pop hooks and melody. When his next band, Sugar, got close to commercial success, he promptly broke it up and wrote a song called "I Hate Alternative Rock." Now, with *The Last Dog and Pony Show* (Rykodisc, 48 min), Mould has done one of the least fashionable things you can do in 1998: he's made an album of impeccably crafted, thoroughly impassioned, straight-out rock & roll.

To this day, what sets Mould apart is a peculiar mix of toughness and sensitivity. His sheet-metal guitar remains a mighty sonic trademark; while he doesn't solo as wildly as he did in the Hüsker days, he's never made an album without a few six-string thrills. Meanwhile, as a songwriter, he tends to look into relationships, and he knows how scary it can get in there: his lyrics regularly put friends, lovers, and him-

self through the shredder, and he saves his warmest tunes for the bitterest diatribes. Perversely enough, Mould's high-volume heartbreak is more fun than the novelty songs clogging the airwaves today. In a climate where just about everyone feels the need to crack jokes, Mould's emotional intensity gets more refreshing all the time.

Long-time Mould-watchers won't hear anything startlingly new on *The Last Dog and Pony Show*, save for a successfully lopsided experiment with loops and samples in "Megamanic." Basically, the album consolidates his work over the past ten years. The material, for the most part, is as introspective as that of *Workbook*, his solo bow from 1989. But he has also brought back the big hooks, live drums, and bright guitar from the Sugar days, throwing in some elegant fingerpicking for balance. And he doesn't mind using a few rock heroics to enhance the songs.

It doesn't hurt that the songs are one of his strongest batches yet. The mostly acoustic "New #1" has the kind of haunting hook

Mould specializes in — ten bucks says it'll stick in your head immediately — while "Moving Trucks" and "Reflecting Pool" are chord-driven classic rock with brains and heart. Listen under the surface and you'll hear him exploring the usual psychic minefield, whether it's early-morning angst ("First Drag of the Day"), the recollection of childhood trauma ("Vaporub"), or, in "Sweet Serene," the simple need for the "elements" of a decent life.

The only disappointing news is that he intends to drop the loud electric-band format after this album and the current tour, hence the disc's title. Still, there is every indication here that Bob Mould will stick to doing what he does best — namely, whatever he damn well pleases. *Brett Milano*

BARENAKED LADIES *Stunt*

(Reprise, 51 min)

★★★★

As far as its American audience is concerned, this red-hot band seemed to come out of nowhere, but, in fact, the kooky Canadians have been around for a decade. *Stunt* is their fourth studio album (and fifth overall), and it bristles with antic wordplay and tack-sharp, smart-pop arrangements that are rather, well, stuntlike. Take "One Week," which passes from tongue-twisting, tongue-in-cheek rap ("Hot like wasabi when I bust rhymes / Big like LeAnn Rimes") to a sweet, briskly sung let's-make-up chorus directed at an estranged paramour. Or take "Some Fantastic," which, paced by a funny, hyperactive synth blast, is irresistibly hooky and undeniably sincere beneath the superficial drollery.

Barenaked Ladies are so surehanded about what they do that it's fun to just sit back and leave the driving to them. As the music scene emerges from its post-grunge hangover, they offer finely turned rhymes and keenly colorful music as a tonic to abused psyches. You can't help but smile at a lovely, lilting folk-pop novelty called "Light Up My Room" about a guy who carries an electrical charge ("I can put a spare bulb in my hand / And light up my yard"). But you don't know whether to laugh or cry at the skeptical look at Life After Higher Education

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Center Channel Speaker

•Twin 5.25" woofers, 1" dome tweeter •60-20KHz •160 watts maximum power •Shielded •Matte black finish

\$129⁹⁹ (YAM NSAC142)

JBL SC305
•Center Channel, 2-way, dual 5" woofers, dome tweeter, 100 watts max., shielded, blackpr. **'99"**

Yamaha NS-E103

•Home Theater Effects Speakers, full-range with 4" driver, shielded, white cabinetpr. **'99"**

Yamaha NS-AP150

•Center Channel/Surround Speaker System, all speakers magnetically shieldedpr. **'129"**

Cerwin-Vega HT-CTR25

•Center Channel, two 5.25" midwoofers & 1" tweeter, shielded, blackpr. **'149"**

Bose® VCS-10™

•Center Ch., 2 drivers in wide dispersion array + 2 drivers in 2-chamber enclosure, shieldedpr. **'199"**

Turntables



Thorens TD180

3-Speed Belt Drive Turntable

•33, 45, 78 r.p.m. •Automatic shut-off & auto-retract •Synchronous motor •External power supply •Includes Stanton cartridge

\$299⁹⁹ (THN 180)

Gemini XL-100
•Semi-automatic, belt-drive, pitch control, includes phono cartridgepr. **'99"**

Aiwa PX-E855

•Fully-automatic, includes cartridge & built-in phono preamppr. **'119"**

Technics SL-BD22K

•Semi-automatic, belt-drive, P-mount style arm, pitch control, blackpr. **'154"**

Gemini XL-500

•Manual, direct-drive, pitch control, pop-up target lightpr. **'228"**

Technics SL-1200II

•Professional Manual, direct-drive, quartz lock, pitch control, silver on blackpr. **'479"**

Speakers



60% OFF
Mfr. Sug. Retail
of \$999.90

JBL CF150

Floorstanding Speakers

•3-way •15" cast-frame woofer •6.25" cast-frame midrange •1" mylar tweeter •325 watts power handling •8 ohms •Black woodgrain finish

\$399⁹⁸/pr. (JBL CF150)

JBL CF120 64% OFF Mfr. Sug. Retail

•Floorstanding, 3-way, 12" cast-frame woofer, titanium tweeter, blackpr. **'249"**

Cerwin-Vega E-312B

•Floorstanding, 3-way, 12" woofer, 300 watts maximum, black cabinetpr. **'399"**

JBL 4312BK

•3-Way control Monitors, 12" die-cast woofer, black Mfr. Sug. Retail \$900/pr.pr. **'499"**

Bose® Acoustimass® 5 Series III

•2 cube speaker arrays & Acoustimass® bass module, black or white cabinetspr. **'599"**

Bose® Acoustimass® 10II

•Home Theater Speaker System, 5-tiny cube speaker arrays + bass modulepr. **'999"**

Mini Audio Systems



Aiwa NSX-A707

Mini Audio System

•80 watts/channel •3-disc CD changer •32-AM/FM presets •Dual auto-reverse cassette •Karaoke mic. mixing •3-way shielded speakers •Remote

\$274⁹⁹ (AIW NSXA707)

Panasonic SC-AK15

•30 watts/ch., 3-D space EQ, 5-disc CD, dual auto-rev. cassette, AM/FM, remotepr. **'199"**

RCA RP9155

•Micro bookshelf size, 15 watts/channel + 15 watt subwoofer, CD player, AM/FM, remotepr. **'249"**

Panasonic SC-PM15

•Bi-amplified design, CD player, auto-rev. cassette, 24-AM/FM presets, remotepr. **'279"**

JVC MX-D602T

•80w x 2 + 25w + 12.5w x 2, 3-tray CD changer, AM/FM, dual auto-rev. cass., 5 speakerspr. **'CALL**

Bose® Lifestyle® 3-II

•AM/FM, CD player, 2 cube speakers + Acoustimass® bass module, bi-amplifiedpr. **'799"**

Portable Stereo Systems



JVC PC-XC11

3-CD Changer/Radio/Dual Cassette 3-Piece Portable Stereo

•3-CD triple-tray changer •15-AM/15-FM presets •4" detachable speakers •Wireless remote

\$179⁹⁹ (JVC PCXC11)

Aiwa CSD-ES225

•CD/AM/FM/Cassette, Q Sound 3D enhancement, bass boostpr. **'69"**

Sony CFD-V35 BLK

•CD/AM/FM/Cassette, Mega Bass® Sound, remotepr. **'89"**

Sony CFD-222

•CD/AM/FM/Dual Cassette, Mega Bass® Soundpr. **'99"**

Panasonic RX-DS28

•CD/AM/FM/Cassette, POWER BLASTER circuit, digital tuner with 20 presets, 3D soundpr. **'119"**

Aiwa CA-DW630

•CD/AM/FM/Dual Cassette, digital tuner with 24 AM/FM presets, remotepr. **'149"**

Sports CD Portables



Aiwa XP-SP1200

Cross Trainer Series Portable CD Player

•E.A.S.S. Plus: 40-sec. electron c anti-shock memory •Water resistant •24-track programming •Headphones & AC adaptor

\$129⁹⁹ (AIW XPSP1200)

Aiwa XP-SP800

•E.A.S.S. Plus: 10-sec. electronic anti-shock memory, water/heat resistant, headphonespr. **'79"**

Panasonic SL-SW505 YEL

•SHOCKWAVE, 40-sec. anti-shock Memory II, 24-track programming, yellow, headphonespr. **'149"**

Sony D-E551 BLUE

•Water-resistant, ESP2 SteadySound 20-sec. anti-shock, 22-track prg., headphones, bluepr. **'149"**

Panasonic SL-SW515

•SHOCKWAVE, 40-sec. anti-shock Memory II, 24-track prg., YMS5, silver, headphonespr. **'179"**

Sony D-E555 BLACK

•Rechargeable, ESP2 SteadySound 20-sec. anti-shock, 22-track prg., headphones, blackpr. **'199"**

MiniDisc Portables



Sony MZ-R50

Portable MiniDisc Player/Recorder

•40 sec. shock-resistant memory •Vertical jog dial •Stereo (74 min./)mono (148 min.) recording •Remote controller headphones •Rechargeable battery

\$349⁹⁹ (SON MZR50)

Sony MZ-EP11

•Portable MiniDisc Player, 10-sec. shock-resistant memory, headphones with remot on cordpr. **'179"**

Sony MZ-R30

•Portable MiniDisc Player/Recorder, vertical jog dial, remote controller headphonespr. **'249"**

Sony MZ-F40

•Portable AM/FM Stereo MiniDisc Player, 16-FM/8-AM presets, headphonespr. **'299"**

Aiwa CSD-MD5

•CD Player/Radio/MiniDisc Recorder Portable Stereo, 30-AM/FM presets, remotepr. **'329"**

Sony MZ-B3

•MiniDisc Business Recorder, stereo or mono recording, built-in mono mic. & speakerpr. **'599"**

DJ Equipment



Gemini PMX-3501

Disco Mixer

•7-band equalizer •2 phono, 5 line, and 2 microphone inputs •Echo •6 sound effects •110/220 voltage

\$228⁹⁹ (GMI PMX3501)

Gemini ST-35

•Mini Strobe, 35 watt variable speed, 1-10 flash/secondpr. **'19"**

Numark DM900

•Blue Dog Mixer, 4-phono/2-line inputs, ALPS faders, replaceable crossoverpr. **'88"**

Gemini PA-700

•Preampifier, slim, single-space design, 19" rack mountable, mic./4-line inputspr. **'128"**

Gemini CD-9500 II

•Pro Double CD Player, instant start, cue, jog wheel, pitch, pitch blend, rack mountablepr. **'598"**

Pioneer CDJ-700S

•Pro CD Player, jog dial, quick start, pitch controlpr. **'CALL**

Portable Stereo Systems



Aiwa NSX-A707

Mini Audio System

•80 watts/channel •3-disc CD changer •32-AM/FM presets •Dual auto-reverse cassette •Karaoke mic. mixing •3-way shielded speakers •Remote

\$274⁹⁹ (AIW NSXA707)

Panasonic SC-AK15

•30 watts/ch., 3-D space EQ, 5-disc CD, dual auto-rev. cassette, AM/FM, remotepr. **'199"**

RCA RP9155

Hi-Fi Stereo VCRs



Panasonic PV-8450
VHS Hi-Fi Stereo VCR
• 4 heads • Trilingual on-screen display • 1-month/8-event timer
• Auto clock set & daylight saving time • TV/cable/DSS universal remote
\$159⁹⁹ (PAN PV8450)

Samsung VR8608
• 4 heads, high-speed fast forward/rewind, universal remote with shuttle **\$149⁹⁹**
JVC HR-A54
• 4 heads, Precision 19 micron heads, VCR Plus+ Auto SP-EP timer recording, remote **\$179⁹⁹**
Sony SLV-678HF
• 4 heads, digital auto tracking, Adaptive Picture Control II, multi-brand remote **\$199⁹⁹**
Panasonic PV-8662
• 4 heads, VCR Plus+, auto clock set, commercial advance, remote **\$249⁹⁹**
Sony SLV-M10HF
• Smartfil electronic indexing, 4 heads, GuidePlus/VCR Plus+ programming **CALL**

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City of Angels DVD **\$19.99**
Halloween 2 DVD **\$15.99**
Homegrown DVD **\$24.99**
It's A Wonderful Life DVD **\$19.99**
Lionheart DVD **\$24.99**



Lost In Space DVD **\$19.99**
Logan's Run DVD **\$19.99**
Man In The Iron Mask DVD **\$19.99**
Mercury Rising DVD **\$19.99**
Oliver! DVD **\$24.99**
Rumble Fish DVD **\$19.99**
Thing (1982) DVD **\$29.99**
Wedding Singer DVD **\$19.99**
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S-VHS Hi-Fi Stereo VCRs



JVC HR-S3500U
S-VHS Hi-Fi Stereo VCR
• VCR Plus+ with Cable Eye cable box controller • 4 heads
• Precision 19 micron heads
• Jog/shuttle • Remote control
\$299⁹⁹ (JVC HRS3500)

Panasonic PV-S7670
• 4 heads, Spatializer Audio Processing, VCR Plus+ with cable/DSS box control, remote **\$299⁹⁹**
JVC HR-S4500U
• 4 heads, VCR Plus+ with Cable Eye cable box controller, pro-style editing, remote **\$399⁹⁹**
JVC HR-S9500U
• 4 heads, DigiPure technology, VCR Plus+ with cable box controller, pro-style editing, remote **CALL**
Sony SLV-R1000
• Cable Mouse System, adaptive picture control, 4 heads, remote **CALL**
Panasonic AG-1980
• Pro Model, digital TBC & digital noise reduction, insert/assemble editing **\$1149⁹⁹**

DVD Players



Sony DVP-S7000
DVD Player
• Plays DVD, audio CD & video CD formats • SmoothScan® special effects • Component video output • Remote
CALL (SON DVPS7000)

Panasonic DVD-A110
• Coaxial/optical digital audio out, virtual surround sound, remote **CALL**
Sony DVP-S300
• Dual Discrete optical pickup with separate lasers optimized for CD & DVD, remote **CALL**
Sony DVP-S500D
• Built-in Dolby Digital (AC-3) decoder, Digital Cinema Sound™ processing, remote **CALL**
JVC XV-D2000BK
• Plays DVDs, video CDs & audio CDs, Dolby Digital (AC-3) decoder built-in, remote **\$499⁹⁹**
Panasonic DVD-A310
• Built-in advanced Dolby Digital 5.1 ch. surround decoder, virtual surround sound, remote **CALL**

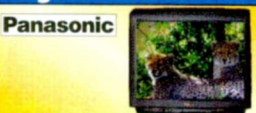
Stereo Color TVs



Sony KV-20V80
20" Trinitron® Stereo Color TV
• Advanced on-screen menu
• Digital comb filter • Matrix Surround™ sound • Fixed/variable audio output • Universal remote • Gray cabinet
CALL (SON KV20V80)

Panasonic CT-20G12
• 20", PanelBlack™ picture tube, up to 500 lines of horizontal resolution, remote **\$249⁹⁹**
Samsung TXG2548
• 25", flat, dark-tint picture tube, contrast enhancement circuitry, remote **\$299⁹⁹**
Panasonic CT-27G13
• 27", PanelBlack™ picture tube, up to 500 lines of horizontal resolution, remote **\$359⁹⁹**
Sony KV-27V65
• 27", Trinitron™ picture tube, digital comb filter, 2-tuner picture-in-picture, remote **CALL**
Samsung TSF3278
• 32", flat, dark-tint picture tube, picture-in-picture, remote **\$599⁹⁹**

High-End Color TVs



Panasonic CT-31SF24
31" SuperFlat™ Stereo Color TV
• SuperFlat™ data-grade picture tube with Invar Mask • Color picture-in-picture capability
• Spatializer 3D stereo • Lighted home theater remote
\$799⁹⁹ (PAN CT31SF24)

Panasonic CT-27SF25
• 27" SuperFlat™ picture-in-picture, up to 700 lines horizontal resolution, Spatializer 3D stereo **CALL**
Samsung TXE2759
• 27", Ultra-flat screen, 2-tuner picture-in-picture, 6 speakers, universal remote **\$649⁹⁹**
Sony KV-35XBR48
• 35" Trinitron™ XBR™, deep black screen, picture-and-picture, joystick remote **CALL**
Sony KV-32XBR100
• 32" Trinitron™ XBR2™, Flat™ screen, Twin-View™ 2-tuner picture-in-picture, joystick remote **\$1799⁹⁹**
Sony VPL-W400Q
• LCD Video Projector, for screens from 41" to 300", digital TV ready **CALL**

Hi-Fi Stereo VCRs



Panasonic PV-8661
VHS Hi-Fi Stereo VCR
• 4 heads • VCR Plus+ • Digital auto picture • Auto clock set with 24-hour backup • Universal TV/cable/DSS tower remote control
\$199⁹⁹ (PAN PV8661)

Samsung VR8808
• 4 heads, VCR Plus+, auto clock set universal TV/cable box remote **\$189⁹⁹**
Aiwa HV-FX7000
• 4 heads, VCR Plus+, digital auto tracking, universal remote **\$199⁹⁹**
JVC HR-VP654
• 4 heads, VCR Plus+ with Cable Eye, Precision 19 micron heads, remote **\$229⁹⁹**
Sony SLV-798HF
• 4 heads, VCR Plus+ Gold channel mapping, Smart Setup, remote **CALL**
Sony SLV-998HF
• 4 heads, VCR Plus+ Gold channel mapping, Adaptive Picture Control II, remote **CALL**

VHS-C/8mm Camcorders



JVC GR-AX230U
VHS-C Camcorder
• 22x optical hyper zoom
• Wide angle • Super LoLux (less than 1 lux) • ProLogAE with special effects • Instant titles
\$349⁹⁹ (JVC GRAX230)

Samsung SCA20
• 8mm, 32x-variable speed digital/16x-optical zoom, wide angle lens & auto macro **\$299⁹⁹**
Canon ES2500
• Hi-8, 22x optical zoom, color viewfinder, optical image stabilizer, built-in titler **CALL**
Panasonic PV-L758
• VHS-C, 23x-optical/50x-digital zoom, 3.2" color LCD monitor, digital electronic stabilization **CALL**
Sony CCD-TRV65
• Hi8 XR Handycam Vision™, 18x-optical/72x-digital zoom, 2.5" SwivelScreen LCD, SteadyShot **CALL**
Sony CCD-TRV85
• Hi8 XR Handycam Vision™, 18x-optical/72x-digital zoom, 3.5" SwivelScreen LCD, SteadyShot **CALL**

Digital Camcorders



Sony DCR-PC10
Pocket-Size Digital Camcorder
• Carl Zeiss Jena 150x digital/12x optical zoom, 2.5" SwivelScreen™ color LCD • Color viewfinder • Super SteadyShot™
• Photo mode
\$2149⁹⁹ (SON DCRPC10)

JVC GR-DVM5
• 2.5" color LCD screen, pull-out viewfinder, 100x digital zoom, 12 digital effects **CALL**
Canon ZR
• Mini DV, ultra-compact, 11x-optical/44x-digital zoom, still photo mode, 2.5" LCD screen **CALL**
Sony DCR-TRV9
• 680K CCD, 3.5" SwivelScreen™ color LCD, color viewfinder, 180x-digital/15x-optical zoom **CALL**
Panasonic AG-EZ30
• Pro Mini DV, 3CCD, 12x-optical/120x-digital zoom, digital still mode, 2.5" color LCD **\$299⁹⁹**
Canon XL1 Kit
• 3CCD, 16x-optical/32x-digital zoom, interchangeable lens system, digital photo mode **CALL**

APS Cameras



Fuji Endeavor 3500ix
APS Zoom Camera Kit
• 21-58mm zoom lens • Multi-function card • Aluminum alloy body • Multi-function zoom flash • Data record • Detachable remote
\$279⁹⁹ (FUJ END3500KIT)

Pentax efina
• Zoom, 24-48mm, date/title imprinting, auto loading, case & battery **\$179⁹⁹**
Olympus NEWPIC Zoom 90
• Zoom, 30-90mm, auto loading, auto/flash, date/time imprinting **\$199⁹⁹**
Nikon Nuvis 110i
• Zoom 30-85mm, built-in flash, parallax compensation, data imprint **\$229⁹⁹**
Minolta VECTIS 30
• Zoom, 30-90mm, splash/proof, drop-in loading, sub-jet program mode selection **\$259⁹⁹**
Canon ELPH 370Z
• Zoom Kit, 23-67mm power zoom lens, includes case, battery & film **\$349⁹⁹**

Binoculars/Scope



Canon 10x30IS
Ultra-Compact Binoculars
• 10 x 30 • Lightweight • Image stabilizer • Double field-flattener
• Multi-coating • Water-resistant non-slip rubber coating • Long eye relief
\$499⁹⁹ (CAN 10X30IS)

Minolta 8570-118
• Standard XL 7 x 35 multi-coated optics & Bak-4 prisms, rubber coated **\$79⁹⁹**
Bushnell Xtra-Wide
• 4x21, 900' field of view, ideal for spectator sports, light blocking eyecups, hip-pack & neck strap **\$99⁹⁹**
Nikon 7348
• 80th Anniversary Edition 6x15 Mikron Binoculars, titanium battery **\$229⁹⁹**
Nikon 515T Model 7312
• 5x15, slim, titanium body, roof prism, fully multi-coated optics **\$379⁹⁹**
Nikon Spotter XL Model 6901
• 16-47x60 Spotter Scope Outfit, multi-coated optics, waterproof/fogproof, includes tripod **\$479⁹⁹**

Remotes/Antennas



Sony RM-AV2000
Universal Remote Control
• Controls up to 12 audio/video components • Pre-programmed for most major brands • LCD touch-screen • Blue backlight eye relief
\$149⁹⁹ (SON RMAV2000)

Sony RM-V18A
• Universal Remote control, controls TV, VCR, cable box & audio components **\$99⁹⁹**
Recoton TV800
• Amplified TV & FM Stereo Antenna, low noise, high gain amplifier **\$59⁹⁹**
One-For-All URC8090
• HomeDirector™ 8 Universal IR/RF Remote Control System **\$79⁹⁹**
Terk AM-FMQ
• Powered Indoor Stereo AM/FM Antenna, 2 modes for optimized reception **\$79⁹⁹**
Terk WAVECOM™ Sr.
• Wireless A/V Everywhere Communicator, remote extender, sends signals to another room **\$199⁹⁹**

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•233MHz PowerPC™ G3 processor •Built-in 15" monitor (13.8" VIS) •56Kbps V.90 modem •Cable modem ready

\$1299⁹⁹ (APP M6709LL/A)



Apple® PowerBook® G3/233

32MB/2GB/20x CD •233MHz PowerPC™ G3 processor •13.3" active-matrix color display •66MHz system bus •Built-in 10BASE-T 4MB SGRAM video memory

CALL (APP M6481LL/A)

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- Fallen VHS **\$15.99**
- Postman VHS **\$15.99**
- Devil's Advocate VHS **\$13.99**
- Full Monty VHS **\$11.99**
- The Game VHS **\$15.99**

Lost In Space
\$15⁹⁹ VHS

NEW LINE HOME VIDEO

- Rocky Horror Picture Show** VHS **\$11.99**
- Red Corner VHS **\$15.99**
 - Boogie Nights VHS **\$15.99**
 - Marvin's Room VHS **\$15.99**
 - G.I. Jane VHS **\$12.99**
 - Mimic VHS **\$12.99**
 - Chasing Amy VHS **\$15.99**

Computer Peripherals



Smart and Friendly™ CD-R W426 Deluxe External CD Recorder

•4x record/2x rewrite/6x read
•2MB buffer memory •SCSI II host adapter •Includes software suite for PC & Macintosh

\$649⁹⁹ (SMD SAF782)



Dazzle Multimedia Video Parallel Port Adapter

•Easiest parallel port video capture for PCs •Record, edit & save TV quality video in your PC from any source •Software bundle includes Kai's Power Goo (full version), Adobe PhotoDeluxe & more

\$179⁹⁹ (DAZ 1000)

Microtek Scanners



MICROTEK

Microtek ScanMaker® V310
Single-Pass Color Flatbed Scanner
•30-bit color •300 x 600 dpi, 4800 x 4800 dpi (interpolated)
•Parallel port installation
•Includes Kai's Photo Soap
\$79⁹⁹ (MTK V310)

ScanMaker® E3 Plus
•30-bit, 300x600 dpi, 4800 dpi (interp.) parallel port
After \$10-Mail-In Rebate (exp. 10/31) **\$119⁹⁹**

ScanMaker® E3 Plus For Mac
•30-bit color, 300 x 600 dpi, 4800 (interpolated), SCSI interface **\$129⁹⁹**

ScanMaker® V600
•30-bit, 600 x 1200 dpi, 9600 dpi (interpolated), parallel port, for PCs **\$129⁹⁹**

ScanMaker® X6
•36-bit, 600 x 1200 dpi, enhanced parallel port, Kai's Photo Soap & more, for PCs **\$179⁹⁹**

ScanMaker® X6EL
•36-bit, legal-size, 600 x 1200 dpi, Adapter SCSI card, Adobe Photoshop LE, for PCs **\$249⁹⁹**

Electronic Reference



Psion Series 5
8MB Handheld Computer
•BONUS LOTUS ORGANIZER BUNDLE (\$199 value), it includes: Case, Lotus Organizer software, CardScan software & OAG Flight Guide
\$499⁹⁹ **After \$50 Mail-In Rebate (PSN SERIES5)

Sharp OZ-640pc
•Wizard® Personal Organizer, 512KB memory, 40-character/10-line display **\$149⁹⁹**

3Com Palm III
•Pocket Size Organizer, 2MB RAM, HotSync docking cradle (3CM 80300U) **\$399⁹⁹**

Casio CASSIOPEIA™ E-10
•Pen-Based Electronic Organizer, Windows® CE 2.0, 4MB memory, voice recording **\$399⁹⁹**

Philips Nino™ 301
•Pen-Based Palm PC Personal Companion, 4MB memory (PHI NN01202NA) **\$399⁹⁹**

Hewlett-Packard HP 660LX
•Color Palmtop PC, full-color backlit display, 32MB RAM, Windows® CE 2.0 (HP F1270A) **\$999⁹⁹**

Business Software



NaturallySpeaking™ Preferred (v3.0)
by Dragon Systems
•Continuous speech recognition
•Includes Dragon Naturally Mobile •CD-ROM for Windows 95/98/NT
\$149⁹⁹ (DRI NATURALLY3-C)

Linux (v5.1) Operating System
•By Red Hat, CD-ROM for PCs (RHB LINUX5.1-C) **\$29⁹⁹**

Point Shop Pro (v5.0)
•By Jasc Software, CD-ROM for Windows 95/NT (JAI POINTS-C) **\$59⁹⁹**

Norton Utilities (v3.0)
•By Symantec, CD-ROM for Windows 95 (SMI NU3-C) **\$69⁹⁹**

Home Essentials 98 Upgrade
•By Microsoft, CD-ROM for Windows 95/NT (MSI HOMEES98U-C) **\$99⁹⁹**

WordPerfect Suite Upgrade
•By Corel, w/ Dragon NaturallySpeaking, CD-ROM for Win. 95/NT (CRB WP8DRAGNU-C) **\$99⁹⁹**

Printers



Brother HL-1040
Windows/DOS Laser Printer
•Up to 10-ppm •True 600 x 600 dpi
•2MB standard memory •200-sheet paper tray •Straight paper path •Drivers for Windows 95

\$299⁹⁹ (BRT HL1040)



Hewlett-Packard DeskJet 722C
Color Printer
•Photo-quality printing, the best for home
•Smallest ink drops for more shades of color •Up to 8ppm
•HP PhotoREt II •Handles up to legal size •Superior results on plain paper •Windows 3.1x/95/NT 4.0 compatible

\$299⁹⁹ (HP C5871A)

Audio/Video Furniture



BELL'OGGETTI

Bell'Oggetti AVS-800
Hi-Rise A/V Rack
•Holds TVs up to 40" & 4 or more audio/video components
•Tempered safety glass shelves
•Heavy gauge metal •45" w x 59" h x 24" d
CALL (BLG AVS800)

Peerless PM13
•TV Wall Mount, for 13" TVs, swivel & tilt, black or white **\$49⁹⁹**

Elite EL-318
•Audio/Video/TV Stand, Hi-boy style, glass doors, 2-shelves, casters, black **\$99⁹⁹**

Elite EL-694
•Audio Cabinet, 4 front shelves + 5 side shelves for tapes, CDs, etc., casters, black **\$149⁹⁹**

Bell'Oggetti AR-703
•Audio Rack, all-metal, 4 adjustable shelves, high-impact thermo finish **CALL**

Plateau MXAV1
•Modular A/V Rack, 5-audio/3-video shelves, will hold up to 35" TV **\$289⁹⁹**

Audio/Video Add-Ons



AudioSource EQ 600
Home Theater Multi-Channel Graphic Equalizer
•6 channels •10-bands/channel
•±12dB •4-sets of faders: Front L&R, Rear L&R, Center & Subwoofer
\$399⁹⁹ (ASO EQ600)

Dynaco QD-1
•5-Channel Home Theater System Adapter, converts 2-ch. stereo into 5 ch. home theater **\$29⁹⁹**

Speco SSB5
•Speaker Switching Box, holds up to 5 pairs of speakers & 50 watts **\$39⁹⁹**

Sima Video CopyMaster™
•Digital Image Stabilizer & Video Enhancer, stabilizes signals for crisp, bright movies **\$49⁹⁹**

JVC JX-5300
•Remote Audio/Video Switcher, 4 A/V inputs & 3 A/V outputs with S-video compatibility **\$219⁹⁹**

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Trick or Treat!

"IT'S FALL," announces John McCutcheon. "We've got three months to sing this song." Released on the Rounder Kids imprint, *Autumnsongs* is the third installment in McCutcheon's *Four Seasons* series (*Wintersongs* and *Summersongs* are already out, *Spring-songs* is due in 1999), and it's full of folksy pleasantries, including "Pumpkin Man," "World Series '57," "Campfire," "Thanksgiving Day," and "Colors" (of the leaves, naturally). Adults will appreciate "Labor Day" and, inspired by Cesar Chavez's rallying cry, "Sí Se Puede" ("Yes We Can"). But if McCutcheon's "Halloween" is too tame for you, try the latest entry in Rhino's *Just Can't Get Enough* series, *New Wave Halloween*, which offers an R-rated song by Sonic Youth called "Halloween," another R-rated



song by the Dead Kennedys called "Halloween," and four more songs called (boo!) "Halloween." Elsewhere, MX-80 Sound covers the theme from John Carpenter's original *Halloween*, the Comateens cover the theme from *The Munsters*, and, waddayaknow, Mudhoney covers that R-rated song by Sonic Youth called (boo!) "Halloween." Then there's "Creature with the Atom Brain" by the legendary Roky Erickson, whose "personal experience as an inmate at a Texas state mental institution in the late '60s makes him an authority on weird horror-movie imagery," as Rhino's self-mocking essay points out. "At Rhino, we don't offer imitation looniness to our customers — we give 'em the real thing!" Pass the candy corn, Jamie Lee! **Ken Richardson**

in "Never Is Enough," whose narrator taunts: "You get your Ph.D. / How happy you will be / When you get a job at Wendy's / And are honored with Employee of the Month."

Well, it's that kind of world, isn't it? At least albums like *Stunt* make it bearable by offering a batch of addictively catchy pop-rockers to chase away the blues.

Parke Puterbaugh

GILLIAN WELCH

Hell Among the Yearlings

(Almo Sounds, 39 min)

★★★★★

Two years after *Revival*, her spellbinding debut album, 30-year-old Gillian Welch still evokes the life of Appalachia, Dust Bowl Oklahoma, and *Grapes of Wrath* California — even though this crafter of breathtaking backwoods song-poetry hails from L.A., born not of parents who worked mines or fields but of a music team who wrote for *The Carol Burnett Show*.

You'd never know that from listening to *Hell Among the Yearlings*, as somber and dark an album as any in the folk canon. Welch warns you right up front: the opening cut, "Caleb Meyer," is a murder ballad about a rural woman who slits the throat of a drunkard attempting to rape her. Later on, in "One Morning," a mother opens her front door to discover her dead son on horseback, shot full of holes and black with blood. Not

bleak enough yet? Stay tuned. There's all manner of misery ahead.

Although she counts her influences as "equal parts Pixies, R.E.M., and the Stanley Brothers," Welch is mostly a thrilling throwback to Jean Ritchie, early Merle Haggard, the Carter Family, and — with her two-part-harmony partner and co-writer David Rawlings — every important bluegrass brother act who ever picked up the sparest of instrumentation to convey their emotions. Welch begs off the terms folk, country, bluegrass, and acoustic music, calling her sound "American Primitive." Despite the severity of subject matter and sameness of mood here, you'll likely just call it terrific.

Alanna Nash

ROD STEWART

When We Were the New Boys

(Warner Bros., 42 min)

★★★

The Best of Rod Stewart

(Mercury, 78 min)

★★★★★

The Best of Rod Stewart, Vol. 2

(Mercury, 78 min)

★★★★★

On his current album, Rod Stewart aims to summon the brash spirit of his early solo records by revisiting their organic arrangements while drawing on some youngbloods for material. The approach is prom-

ising and the results satisfying, if not exactly revelatory. For one thing, Rod was a more involved participant in the scene from 1969 to 1974, and he also tended to write as many songs as he covered. By contrast, for *When We Were the New Boys*, Stewart had song-pickers select tunes for his approval, and he brought only one of his own to the table. That song, the title track, sentimentalizes his days as a young stallion with an epic overstatement worthy of *Braveheart*. He does, however, retool Oasis's "Cigarettes and Alcohol" as a vintage, bawdy rocker and get maximum riff-rocking voltage out of Primal Scream's "Rocks." But much of the rest is ballad-besotted and suffers for its autumnal emotions and furrowed brow — especially when stacked up against the two *Best of Rod Stewart* volumes that have now reappeared.

These single CDs of two double LPs from the mid-1970s do indeed qualify as revelatory, based on the sonic details that emerge from the stunning 20-bit remasters. Whether it's the crisply palpable snapping of fingers on guitar strings or the holographic interplay of instruments, the CDs sound like the musicians must have felt when they were making this music — that is, like they were bursting out of their skin. The first nine tracks on the first volume, spanning material from *The Rod Stewart Album* to *Every Picture Tells a Story*, are as good as rock & roll gets in its programming and making. Together, both CDs are an exceptional deal, condensing Stewart's five Mercury albums onto two discs without losing anything indispensable (except maybe "Jo's Lament"). Moreover, they make the picturesque vitality of Stewart's essential early work leap to life as never before.

Parke Puterbaugh

THE V-ROYS All About Town

(E-Squared/Warner Bros., 36 min)

★★★★★

With the V-roys, you've got to expect the unexpected: roots rock, laced with either distorted or crystal-clear guitar, rubbing up against bluegrass where banjo, mandolin, and fiddle vie for time, in songs to girls worshipped, lusted after, or reviled, wrapped in '60s-style chord progressions — and all topped off with the country-rock sensibilities of the Twangtrust cooperative of producers Ray Kennedy and Steve Earle. It's a smorgasbord with a killer backbeat. Sometimes all in one song.

On *All About Town*, the Knoxville-based V-roys reprise the prodigious eclecticism of their 1996 debut record, *Just Add Ice*, veering from the Dirt Band redux of "Mary" and the college-boy excitement of "Amy 88" to the prideful Irish romp of "Over the Mountain." Aside from the emotional vibrancy (and the universal appeal of the Everyman vocals), what stands out is the band's

cornucopia of sounds: a buzzing saw of an electric guitar, a sneering snare, an angry bass. For all the simplicity of its subject matter, the music here is as complex as good pop music gets. In their close-cut suits and ties, the V-roys may look like frat boys, but they play like mothers. *Alanna Nash*

LINDA RONSTADT *We Ran*

(Elektra, 50 min)

★★★★

TRISHA YEARWOOD

Where Your Road Leads

(MCA Nashville, 42 min)

★★★

For Linda Ronstadt, who has found nearly everything she's released of late exiled to "lite" radio, *We Ran* is an attempt to revisit the roots-rock landscape she once defined and ruled. Thankfully, she's not only in great form but in great company. Aided by such old colleagues as Bernie Leadon and Waddy Wachtel, she powers her way through a set that includes songs by John Hiatt ("When We Ran"), Bruce Springsteen ("If I Should Fall Behind"), and Bob Dylan ("Just Like Tom Thumb's Blues"). Yet it's the new material — notably, "Heartbreak Kind," a slithery duet with Leadon, and Wachtel's affecting ballad "I Go to Pieces" — that impresses the most. Notable, too, is veteran Glyn Johns's production, characteristically expansive but just edgy enough.

For Ronstadt's spiritual protégée Trisha Yearwood, who has found nearly everything she's released in her career restricted to the country corral, *Where Your Road Leads* is an attempt to head for the cross-over pop hills, where her eclectic music has long deserved to roam. That she and coproducer Tony Brown should be satisfied with the generally lackluster arrangements here, however, is both surprising and disappointing. Tracks like "There Goes My Baby" and "I Don't Want to Be the One" are busy but dull, while others are subverted by rhythmic flatness. The set is nearly redeemed by Yearwood's performance in the torcher "Love Wouldn't Lie to Me," the soaring duet with Garth Brooks in the title cut, and the frisky "Bring Me All Your Lovin'." If only more of the album had such flavor. After all, as Ronstadt proved two decades ago, if it's popular, it's pop. *Billy Altman*

NATALIE MERCHANT *Ophelia*

(Elektra, 57 min)

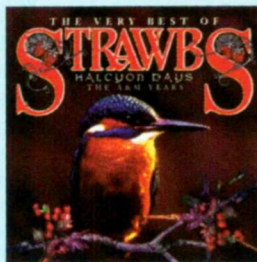
★★★

Has Natalie Merchant been hanging out with Tracey Ullman? In the photographs for *Ophelia*, Merchant is done up as a circus star, a debutante, a stern librarian, a homeless waif, an actress, a nun, and a prostitute, none of which (except maybe the librarian) bears much resemblance to her usual persona. The poses are from a surreal 20-minute promotional film that doesn't

STRAWBS

CATALOG UPDATE

The great news for American fans of the British band Strawbs is that A&M/Chronicles has just released *The Very Best of Strawbs: Halcyon Days, The A&M Years*, an essential two-CD set drawn primarily from the early 1970s. Collectors may protest that this is merely a Stateside edition of the compilation released last year by A&M U.K., but, in fact, the sets are very different. Chronicles producer Bill Levenson decided to rework the British *Halcyon Days* for the U.S. market with the help of the band's constant keeper, Dave Cousins. They rerelected the tracks and gave them full annotation, including an expanded version of the original essay by Strawbs authority John Tobler. And Levenson had nearly all of the songs remastered again because he wasn't satisfied with the U.K. sound. Overall, the U.S. *Days* is the better package. As for the



sound, that's more of a personal call: to me, much of the U.S. edition is on the warm side, whereas the U.K. set is brighter — often to the point of being too sibilant. The U.S. remasters do sound excellent on their own.

Fans may still want to get the U.K. *Halcyon*, too, for its rarities, including singles by Richard Hudson and John Ford's splinter group as well as Strawbs B-sides. Then again, a Hudson Ford collection is due from PolyGram U.K./Spectrum, and many of the same Strawbs B-sides are turning up on A&M U.K.'s Remasterpieces series of original Strawbs albums, executive produced by Mike Gill. By press time, I'd received three — *From the Witchwood*, *Grave New World*, and *Bursting at the Seams* — and they

are fine-sounding packages, albeit without lyrics. By the time you read this, three more titles should be out: *Just a Collection of Antiques and Curios*, *Hero and Heroine*, and *Ghosts*.

Tobler has made more Strawbs material available on CD via his own label, The Road Goes On Forever (P.O. Box 12, Barnet, Hertsfordshire EN4 8PT England; e-mail, rgf@rgfrecords.demon.co.uk). He is to be especially commended for offering a pair of two-CD sets that each bring together two albums: *Deep Cuts* and *Burning for You* on one, *Ring- ing Down the Years* and *Don't Say*

Goodbye on the other, all with lyrics. Also on Tobler's label are *Greatest Hits Live!* (from recordings in the early 1990s, as opposed to the 1973-74 dates on Windsong/BBC Radio's *In Concert*), the acoustic *Old School Songs* by Cousins with Brian Willoughby, the previously unreleased, post-

Deadlines album *Heartbreak Hill*, and a two-CD set of early material, *Preserves Uncanned*. Back in the States, other versions of that early material are available on Hannibal's *Sandy Denny and the Strawbs*, and *Deadlines* is on *One Way* (P.O. Box 6429, Albany, NY 12206). Levenson would like to cover the post-A&M years on another two-CD set. Meanwhile, a four-CD box may be available from PolyGram U.K. as early as October.

Go to *StrawbsWeb* (www.strawbpage.ndirect.co.uk), expertly overseen by Dick Greener, and you'll likely find a report on the band's 30th-anniversary concert, which was scheduled for August 29 in London. A live recording of the celebration is conceivable. *Ken Richardson*

PHOTO COURTESY OF CHRONICLES



Cousins (foreground), Tony Hooper, Rick Wakeman, Ford, and Hudson, circa 1971

make the album concept any clearer, but, as the title track sort of explains, they represent the multiple personalities of the character Ophelia; we're led to assume that the songs are written in her voices. But never mind that the concept doesn't hold up. More important is that the intriguing weirdness of the photos carries over to the music, making *Ophelia* the first real departure of Merchant's career.

Stretching beyond the earnest folk/pop she's known for, the music here is so slow

and austere that 10,000 Maniacs seems like a punk band in comparison. The single "Kind & Generous" is the only commercial-sounding track; the rest is light on hooks and rhythm and heavy on strings and atmosphere. And, yes, things get dull, but there's also a strange beauty that's new for Merchant. The Innocence Mission's Karen Peris does some lovely harmonies in the Carter Family-styled "When They Ring the Golden Bells," and "Thick as Thieves" peaks with a guitar solo by Daniel Lanois, whose influence is felt in the disc's textural production (for which nobody takes credit). While too spotty to be considered a breakthrough, *Ophelia* introduces a less predictable Natalie Merchant. *Brett Milano*



Merchant: Who are we today?

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THE LONG RYDERS Looking for Lewis and Clark: Anthology

(PolyGram/Chronicles, two CDs)

Forty remastered tracks from the '80s band that helped blaze the trail for Wilco and Son Volt. Essay by David Fricke.

MARTIN MULL

Martin Mull and His Fabulous Furniture in Your Living Room

(Capricorn Classics)

Mulling It Over:

A Musical Oeuvre-View

(Razor & Tie)

Before becoming an actor and a painter, he sang funny songs. The first item is from 1973; the second is a new collection drawn from all four of his Capricorn albums.

THE MAHAVISHNU ORCHESTRA WITH JOHN McLAUGHLIN

The Inner Mounting Flame

(Columbia/Legacy)

JEFF BECK Blow by Blow

(Mobile Fidelity Sound Lab)

Two guitarists tackle fusion, the first from 1971, the second from 1975.

ULTIMATE BROADWAY

(Arista, two CDs)

MY FAIR LADY

(Sony Classical/Columbia/Legacy)

A FUNNY THING HAPPENED ON THE WAY TO THE FORUM

(Rykodisc, enhanced CD)

Arista offers 40 "showstoppers" from *Oklahoma!* to *Rent*. Sony remasters the original-cast *Lady* with Julie Andrews. And Ryko puts the film version of Stephen Sondheim's first complete musical on an enhanced CD with the movie trailer.

SOUNDS OF

NORTH AMERICAN FROGS

(Smithsonian Folkways) First issued in 1958, it's what it says it is — with 57 species on 92 tracks. All croaks remastered!

SHEMEKIA COPELAND

Turn the Heat Up

(Alligator, 63 min)

★★★★

As her debut album indicates, Shemekia Copeland, daughter of Johnny Clyde Copeland, has yet to develop a distinct identity as a vocalist — but she is only 19 and already terrific. Singing in the groove of Aretha Franklin and Etta James with clear lineage to the era of Bessie Smith, Copeland maneuvers her powerful voice through a blues-drenched program, accompanied by solid guitar licks and rollicking piano. She is heard to greatest advantage in the less raucous numbers, including "It Don't Hurt No More," "Salt in My Wounds," and her father's "Ghetto Child." Joe Louis Walker guests on "My Turn Baby" with good results, and there are three appearances by the Uptown Horns, a group that evokes shades of the old Specialty label. We'll be hearing much more from Shemekia Copeland; I just hope that her talent is framed in more imaginative arrangements. *Turn the Heat Up* is an earthy trek, but her voice can take her beyond such limits. *Chris Albertson*

DWIGHT YOAKAM A Long Way Home

(Reprise, 42 min)

★★★★

WILL SING FOR FOOD:

THE SONGS OF DWIGHT YOAKAM

(Little Dog/Mercury, 54 min)

★★★

Dwight Yoakam's first all-new album in three years is being greeted as a return to musical roots — which it is, up to a point. The experiments of his last few albums are indeed toned down in favor of a purer honky-tonk sound that harks back to his debut. But Yoakam doesn't ignore current trends entirely: "Things Change" brings him as close to Garth Brooks as he's ever likely to get. Nor does he play down the left-field streak in his writing. The songs of *A Long Way Home* take his usual romantic bleakness to new extremes, but they're done up so attractively that you may not notice.

"Yet to Succeed," perhaps his most miserable love song to date, is so gorgeously morose that one could imagine Nick Cave covering it. Still, Yoakam doesn't sit back and cry in every tune; he goes out for revenge in "The Curse" and gets downright paranoid in "Only Want You More."

The songs on *Will Sing for Food*, a benefit for the homeless, are handled with care because the project was supervised by Yoakam's producer, Pete Anderson. Instead of trotting out big stars to prove the versatility of the material, Anderson turns most of the songs over to like-minded country mavericks. (Bonnie Bramlett's blues-mama version of "What I Don't Know" is the only one that doesn't fit.) The foreboding of "Miner's Prayer" is right up Gillian Welch's alley, the Backsliders rock mightily in "Do-in' What I Did," and both Pete Droge and the Blazers connect with Yoakam's honky-tonk side. *Brett Milano*

JAZZ

JAMES CARTER In Carterian Fashion

(Atlantic, 62 min)

★★★★

On the aptly named *In Carterian Fashion*, saxophonist James Carter alternates with Henry Butler, Cyrus Chestnut, and Craig Taborn as he flirts with the organ-combo sound of '50s lounges. Of course, he doesn't play it straight for long, but long enough to capture the setting's true flavors before soaring, sometimes screaming off into his own thing. The juxtaposition of past and present works well, especially with an organist like Taborn, who doesn't mince notes. Butler and Chestnut have a less aggressive approach, but that, too, fits into Carter's scheme of things. "Lockjaw's Lament," with Chestnut, is a beautiful track that shows what a sensitive musician Carter is, and it offers a prepossessing contrast to the more daring title composition, which

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STORYVILLE Dog Years

(Atlantic, 56 min) ★★★

Despite a name that evokes New Orleans, Storyville is an Austin supergroup that includes Stevie Ray Vaughan's rhythm section and two guitarists with credentials from the Mavericks and Joe Ely. But the production here goes for a song-oriented approach that reins in the firepower. If only they'd loosen up a bit, Storyville could be the best thing to happen to blues-rock in years. *B.M.*

10cc The Original Soundtrack

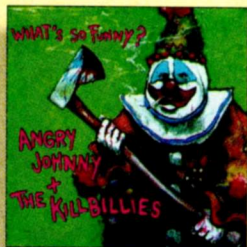
(Mobile Fidelity Sound Lab, 42 min) ★★

If albums were judged solely on their sound, MoFi's gold CD of 10cc's 1975 studio wizardry would rate a clutch of enthusiastic stars. The choir on "I'm Not in Love" is indeed impressive. But the song has a no less three-dimensional sound on *The Very Best of 10cc*, the Mercury/Chronicles set from 1997. And, getting back to the original point, the music here is a flawed standoff between the band's pop and progressive factions. *P.P.*

JON FADDIS Remembrances

(Chesky, 67 min) ★★★

A collaboration with arranger/conductor Carlos Franzetti, *Remembrances* features a mostly familiar repertoire with voluptuous accompaniments that run the gamut from updated Percy Faith to Miles-era Gil Evans. Above it all rides Faddis, a lyrical trumpeter with impeccable taste and the good sense not to dominate. The music is captured with remarkable clarity in Chesky's 96-kHz/24-bit high-resolution recording. *C.A.*



ANGRY JOHNNY & THE KILLBILLIES

What's So Funny?

(Tar Hut, 66 min; P.O. Box 441940, Somerville, MA 02144;

e-mail, tarhut@aol.com) ★★★

They're on the loose again. Set to thrashing guitars, saxophone, tuba, and banjo, this sonata for serial killers is far too well done to dismiss as novelty. But it's Angry Johnny's punked-up vocals and obsessed songwriting that you'll really

remember. Of course, after listening to this stuff, you'll want to drive a stake through the heart of anyone who ever looked at you cross-eyed. *A.N.*

MEDESKI MARTIN & WOOD

Combustion

(Blue Note, 69 min) ★★★

JOHN SCOFIELD A Go Go

(Verve, 52 min) ★★★

The modus operandi of the organ trio Medeski Martin & Wood is free association. Even when they behave themselves, as they do playing funky rhythms for guitarist Scofield, they can't help but slip little sounds of surprise into the music's well-worn grooves. The only drawback is that in their context of no context, everything tends to sound parodic. *R.C.W.*

SUZY BOGGUSS

Nobody Love, Nobody Gets Hurt

(Capitol, 40 min) ★★★

Bogguss finally strikes the right balance between art and commerciality, between folk and modern country. The material — by the likes of Cheryl Wheeler, Matraca Berg, and Kim Richey — addresses grown-up concerns in adult ways, and Bogguss is enmeshed in the passion of the songs. The album of her career. *A.N.*

CABARET

The New Broadway Cast Recording

(RCA Victor, 67 min) ★★★

Original Broadway Cast Recording

(Sony Classical/Columbia/Legacy, 71 min)

★★★★

The sparkling recording of the revival has the advantage of several hit songs written for the 1972 film version. Yet the original cast album from 1966, newly restored, has three of the most compelling talents in Broadway history in Joel Grey, Lotte Lenya, and Jack Gilford, as well as four songs that never made it past demos as sung by composer John Kander and lyricist Fred Ebb. *Will Friedwald*

RADNEY FOSTER

See What You Want to See

(Arista Austin, 43 min) ★★★

Foster delivers the record he was born to make, full of pain, exhilaration, tenderness, hard-won wisdom, and a hip-to-their-tricks shrewdness. With a pop-rock format that's more muscular and harder-edged than anything on the Foster & Lloyd albums or his solo records, he conjures a level of maturity in his lyrics and a fuller, more tuneful execution in his melodies. *A.N.*

follows. On Don Byas's "Don's Idea," things get really hot, in the old jazz sense, thanks in large measure to the ferocious trumpet of fellow frontliner Dwight Adams, who is also an asset on three other tracks.

Chris Albertson

THE HEADHUNTERS

Return of the Headhunters

(Hancock/Verve Forecast, 54 min)

★★★

DON BYRON Nu Blaxploitation

(Blue Note, 75 min)

★★★

Herbie Hancock originally formed the Headhunters in 1973 after the experimental efforts of his previous fusion combo, the Sextant, met with widespread public indifference. The new band was, up to that point, the keyboardist's most willfully (and, some would say, crassly) commercial effort — and it worked. On *Return of the Headhunters*, Hancock appears on only a few of the cuts (replaced elsewhere by Billy Childs), but the core members are back: reedman Bennie Maupin, bassist Paul Jackson, drum-

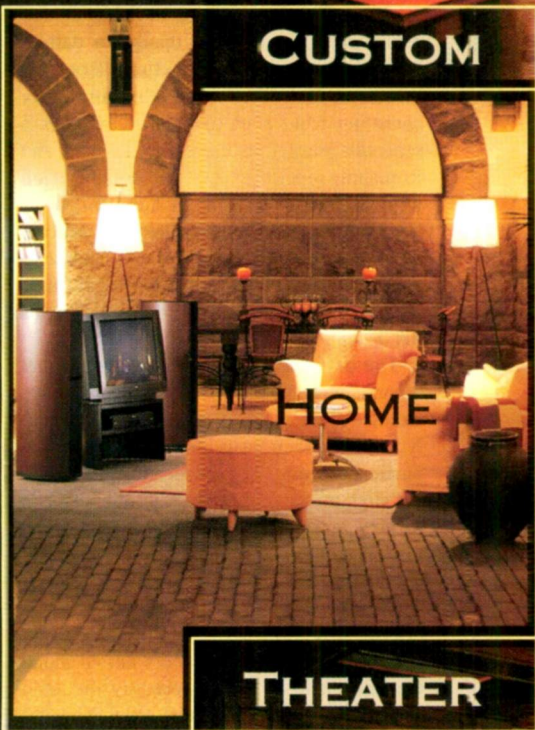


mer Mike Clark, and percussionist Bill Summers. And they do capture the mood and mode of days of yore — a tight but spongy rhythm, some lightly hummable melodies, and a handful of modest solos. However, despite a few changes of pace, the accumulative effect is a little dull. But intentionally so: Hancock has said that he had decided to make music that people could listen to while they did something else because (he reasoned) that's the way most people listen to music.

Meanwhile, clarinetist Don Byron and his group Existential Dred don't just revisit the '70s but rethink the decade's propensity for populist hybrids. The result, *Nu Blaxploitation*, is a mix of old-school groove, social protest, and surrealistic asides — just the kind of ambitious sprawl you'd expect from someone who dedicates his album to both Latin/funk purveyors Mandrill and classical composer Arnold Schoenberg (among others). The down side is that there's a lot of jokey and spoken-word stuff — not the sort of thing that invites prolonged and repeated listening. But the up side is that it's smart and edgy and that Byron is a passionate musician — and one not afraid to make a disc you actually have to sit down and pay attention to. *Richard C. Walls*



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BEST OF THE MONTH Dawn Upshaw/The World So Wide

Dawn Upshaw has a natural ease with American musical idioms and an ability to sing the English language without sounding like an accompaniment to cucumber sandwiches at a Buckingham Palace garden party. Not many classically trained singers could claim as much, and this has given her a special authority in delivering American vernacular music in a cultivated manner. *The World So Wide*, her new collection of 20th-century American operatic arias and musical-theater songs with the Orchestra of St. Luke's under David Zinman (Nonesuch 79458, 45 min), benefits enormously from the way she reshapes her operatic soprano to a more populist style. Singing like this was once common in the musical theater, but it has almost disappeared in our age of amplification. Well, here it is again, and it is glorious.

A high point of the CD is Pat Nixon's aria from John Adams's opera *Nixon in China*, an amazing hymn to traditional American values set in a completely serious and believable heroic style without a trace

of sentimentality or obvious irony. Almost all the other pieces — from Copland's *The Tender Land*, Bernstein's *Trouble in Tahiti*, Douglas Moore's *The Ballad of Baby Doe*, Weill's *Street Scene*, and Carlisle Floyd's *Susannah* — have a folksy or bluesy character that sits remarkably well and without affectation in Upshaw's voice and musical personality.

The one off note is the aria from Barber's *Antony and Cleopatra*, which has that moody Euro-exoticism that caused the opera to be such a monumental failure at its premiere for the opening of the Metropolitan Opera's Lincoln Center home in 1966. Also unusual (but more successful) in this context is Tania León's modernist "*Oh Ye-manja*" ("Mother's Prayer") from music for a radio play by the great Nigerian poet Wole Soyinka.

The recording, made in New York's Hit Factory, creates a slight discrepancy between Upshaw's very bright vocal sound and the darker orchestral accompaniment but otherwise serves the music and the performers quite well. *Eric Salzman*

BRAHMS Cello Sonatas Nos. 1 and 2

Heinrich Schiff, cello; Gerhard Oppitz, piano
(Philips 456 402, 55 min)

★★★★

Some two dozen CDs of the Brahms cello sonatas are currently available, but this new one by Heinrich Schiff and Gerhard Oppitz belongs close to the top of the heap. The First Sonata, in E Minor, can sound pretty gnarly, but thanks in part to the gorgeous tone Schiff elicits from his Stradivarius "Mara," here it's thoroughly charming from start to finish. Oppitz is a seasoned master in the core Classical and Romantic repertoire, and his collaboration with Schiff is very much hand-in-glove. High points include the deliciously delicate lilt in the central *Allegretto quasi menuetto* and the clarity of texture in the fugal finale with its resonances of the duets in Bach's *Art of the Fugue*.

The performance of the exultant Second Sonata, in F Major, is somewhat more restrained than usual at first, but the freely lyrical approach casts its own spell as the music proceeds. The pizzicato episodes in the slow movement are richly telling, while surging ardor informs the succeeding *Allegro passionato*, leaving the brief rondo finale to serve as a soft landing.

My one small reservation about this otherwise distinguished production is a slight lack of piano presence — it's not so much that the piano is overpowered by the cello as that it seems a touch off-mike in music that demands equal participation from both instruments. That caveat aside, I found this CD extremely satisfying. *David Hall*

BRUCKNER Symphony No. 6

Saarbrücken Radio Symphony, Stanislaw Skrowaczewski cond. (Arte Nova 54456, 57 min)

★★★★

Stanislaw Skrowaczewski's Bruckner Sixth is surely one of the outstanding issues so far on the super-budget Arte Nova label, whose list price was recently reduced to \$4.98. The reading is straightforward and clarifying, focusing on the grand design, clearing away some of the contrived mystique without damaging the composer's very genuine driving spirit.

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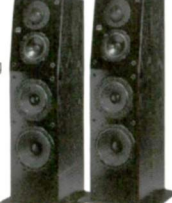
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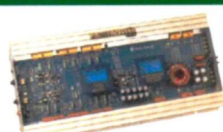
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CENTERSTAGE

Midori's Mature Bow

At 27, Midori is no longer burdened with that double-edged sword, the label "prodigy," nor must she endure the endless stories about child stars who never leave childhood behind. But the glamour of the prodigy is also over. Now she is simply one violinist among many, and she will have to make her way on the basis of music alone.

Does she miss the limelight that has now been shifted from her to an ever younger crop of prodigies? When we spoke she answered emphatically: "I don't miss it at all. I always hated getting attention because of my age. Now there is more attention paid to my music."

Indeed there is, and her musicmaking today deserves all the recognition it gets, as evidenced by the rave reviews for her Sony CD of the Elgar and Franck sonatas last fall. Even as an adolescent, Midori's playing was impeccable in technique and exquisite in lyricism, and she never lost those enviable virtues. But as her teenage years slipped away, some more profound qualities seemed missing — a depth of emotion that probed beneath the polished surface, an awareness of life's darker side, and a willingness to compromise her beautiful tone and tightly controlled interpretations.

With astonishing candor, she looks back and traces her growth as a musician: "In the beginning, when I was 10 or 11, I played by instinct, but there was nothing behind it. And once I started thinking about these things, I became jailed by logic, or at least what I thought was logic."

By the time her teens were over, it was already clear that Midori was no risk-taker. "I was very tight," she admits.

"But many of these works I learned very young, and now I'm relearning them, and I'm much more excited by the music than I used to be."

And what of her newly bold and varied tone, which violates her old standards of beauty? "It all depends on what you consider beautiful sound. A beautiful sound for me is a sound that's connected to my emotions, and emotions aren't always pretty. When the music calls for me to be rough, I go for it, instead of worrying whether it sounds perfect."

Midori's latest recording, the Tchaikovsky and Shostakovich Violin Concertos with Claudio Abbado and the Berlin Philharmonic, is scheduled for release by Sony in late September.

K. Robert Schwarz



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be Hillier himself, who takes the lead in five or six of the nine pieces, including *The Wonderful Widow of Eighteen Springs* and *The Year Begins to Be Ripe*, both for solo voice and closed piano. He even essays a Cathy Berberian-style solo (accompanied by electronics) in the *Aria No. 2*. Berberian, who practically invented modern extended-voice singing, performed the first *Cage Aria*, her signature tune, as a one-woman hurricane. Oddly enough, Hillier makes a much calmer arrangement of that work here by distributing its huge range of styles and colors among the seven vocalists, which include himself as well as the composer Terry Riley. Riley also joins Hillier in the curious piece *36 Mesostics re and not re Marcel Duchamp*, which alternates plain speaking with electronically altered three-note neo-Gregorian chanting.

All these performances are ritualized, normalized, even sanitized. This not very theatrical Theater of Voices emphasizes the abstract musicality and floating spirituality of Cage's music, turning it into a kind of distant meditation.

Eric Salzman

ELGAR Violin Concerto
VAUGHAN WILLIAMS The Lark Ascending

Kennedy, violin; City of Birmingham Symphony, Simon Rattle cond.
(EMI 56413, 72 min)

★
The artist formerly known as Nigel Kennedy recently returned to the classical scene, after a five-year hiatus, reincarnated as, simply, Kennedy. He begins his second career just as he began his first, with a new recording of the Elgar concerto. The earlier one, his first and possibly finest concerto disc, was made in 1984 for EMI.

Kennedy claims to find his first version of the Elgar "textbook oriented," suggesting that the new one shows greater freedom. It does, but in ways that work to the music's detriment. Every phrase in the new recording seethes with passion. The approach is headlong, driven, so breathless as to resist lingering; even the rare points of repose leave no room for relaxation. Kennedy's tone is far leaner than in 1984, his articulations coarser and needlessly rough. The virtuoso passages are played in a slash-and-burn manner, covering up the shaky moments of inaccuracy and imprecision with brutal crunches of the bow.

K. Robert Schwarz

MAHLER Symphony No. 4

Amanda Roocroft, soprano; City of Birmingham Symphony, Simon Rattle cond.
(EMI 56563, 59 min)

★★★
Simon Rattle gives notice in the very opening here that his approach to Mahler's most lovable symphony was freshly thought out, though his innovations have

Symphonies Nos. 4 and 7, nor as profound as Nos. 8 and 9, the Sixth may nonetheless be the quintessential Bruckner symphony, and it benefits enormously from Skrowaczewski's understanding and animation, unfolding with a naturalness and directness that present both the composer and the music in the very best light. The Saarbrücken Radio Orchestra is absolutely up to everything demanded of it, and the sound is very bright (if also a little fiery). For anyone who's been put off by the ceremoniousness that is so often imposed on Bruckner's music, there could hardly be a more effective corrective — and certainly not a more economical one.

Richard Freed

CAGE Litany for the Whale

Theatre of Voices, Paul Hillier cond. (*Harmonia Mundi 907187*, 72 min)

★★★★

While I was playing this John Cage collection, a friend who called me asked if I was listening to Gregorian chant. The comment was not at all farfetched. That the distance between old European and modern American music need not be so great is shown by the title work here, *Litany for the Whale*, a five-note monophonic chant for two responsive voices. As sung by Paul Hillier's early-music singers, it sounds like, well, early music.

The featured performer here turns out to

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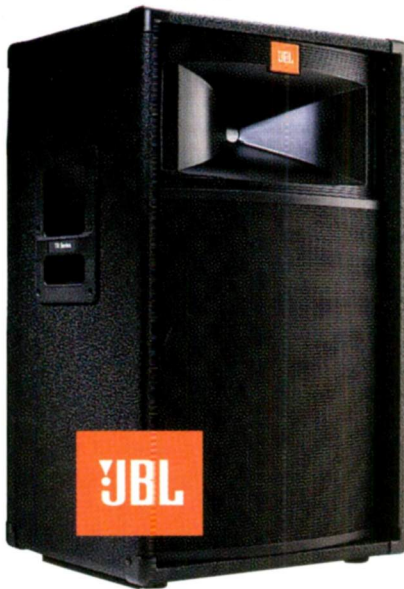
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eminent justification in the score. Instead of setting things up briskly and then switching to a broader speed for the songlike theme of the first movement, he starts more deliberately and gives a much more animated statement of that theme than usual — and it works very convincingly. Even at his very broad tempos for the remaining movements, he maintains a lightness of texture that throws every phrase into high relief and rejects any hint of the ceremonial.

There is a fetching directness in Rattle's approach, and his players happily outdo themselves for him; it's his soloist who lets him (and us) down. Every illuminating phrase in the first three movements has been deliciously realized to prepare for the soprano's song depicting "a child's dream of Heaven," but Amanda Roocroft, for all her vocal solidity and assurance, just won't have any of this. She is neither boyish (actually a blessing), nor maternal, nor in any way good-humored in her delivery of the text's charming imagery, whose very essence is its good humor. The stone-faced finale is disheartening enough to put this otherwise exceptional performance, enhanced by superb sonics, out of the running as a first choice. *Richard Freed*

SCHUBERT Piano Sonatas in C Major (D. 840) and G Major (D. 894)

Mitsuko Uchida, piano (*Philips 454 453*, 70 min)

★★★★

The C Major Sonata on this CD is sometimes labeled "*Reliquie*" because it is one of Schubert's numerous unfinished works. He completed its sprawling opening *moderato* and its slow movement, and he wrote enough of a minuet and finale that he could have brought them to completion without much trouble, but he never did, possibly because his attention was by that time (1825) so fixed on his next sonata, the A Minor (D. 845).

Mitsuko Uchida simply performs the two movements Schubert completed, and she makes me feel that he left nothing unsaid but covered everything in two movements. She seems to offer a meditation — probing and clarifying in a bare-bones way — on the music's prevailing poignancy, without the slightest gesture toward a degree of variety or contrast. In the later and more familiar Sonata in G Major, Uchida does allow some of the enlivening elements to be felt, but only in a relative sense — and, one might say, under pressure from Schubert himself, who did not leave this big work in any sense incomplete and provided inescapable contrasts within its four movements. Moreover, the final movement is a somewhat restrained *allegretto* that suits this pianist's contemplative outlook very comfortably. The playing is consistently beautiful throughout both sonatas, and it is very well

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SCHUMANN Liederkreis; Dichterliebe; Songs

Ian Bostridge, tenor; Julius Drake, piano
(EMI 56575, 69 min)

★★★★★
Schumann's *Liederkreis* and *Dichterliebe*, immortal song cycles setting poems by Heinrich Heine, pose a profound challenge to the interpreter: as much as the moods shift from piece to piece, the overall tone is deeply depressive. The young men whose thoughts these songs express find myriad ways to torture themselves because their love is not returned by the lady in question; in some, love has turned to hate. The challenge lies in probing into the emotional depths of the texts without coming off sounding pallid and droopy. In this CD, the British tenor Ian Bostridge meets the challenge shrewdly by using the golden brilliancy of his voice to emphasize the youthful enthusiasm that infuses many of these songs. His tone is uncommonly sweet yet never sugary, and his diction is marvelously expressive throughout.

The seven songs chosen to fill up the disc also do much to lighten the mood. Bostridge has ferreted out several little-known pieces that have nothing to do with the theme of unrequited love. "Belsazar," for example, is a breathlessly paced telling of the Biblical story of Belshazzar. And "Abend am Strand" is a musical travelogue, with the piano imitating the tranquil lapping of waves against the shore as the narrator daydreams about faraway places. *Jamie James*

SIBELIUS Symphonies Nos. 3 and 6

San Francisco Symphony, Herbert Blomstedt cond. (London 448 817, 60 min)

★★★★★
Sibelius's Third and Sixth Symphonies are among his least popular, but they are wonderful works that eschew the epic for the intimate. The briskly outdoorsy Third marks his farewell to the 19th-century Romantic idiom. For all the delights of the opening movement, which is bracing and muscular in this somewhat fast performance, I am more intrigued by the middle movement, suggestive of a lyrical slow waltz but actually urged on gently by a mix of 6/4 and 3/2 rhythms. The scherzo-finale is hard to bring off because it's tricky to get the right pacing for the quasi-triumphal march at the end, but Herbert Blomstedt does it as well as I have ever heard.

The Sixth is a very special work, that to me is definitely pantheistic in spirit. Sibelius here returned to the four-movement format and added a harp and a bass clarinet to his orchestra. There are no big, spectacular moments in the music aside from the climaxes at the close of the first movement

and midway in the fourth, and these therefore have great impact. The effect is like an overcast day with brilliant sunshine breaking through from time to time — Sibelian magic at its most entrancing. Blomstedt's reading differs from most I have heard in trading the ethereal for the earthy, which may be a result of the apparently rather close miking. It works splendidly in the Symphony No. 3 but gives an unusual perspective on No. 6. *David Hall*

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Sutherland, Pavarotti, Nucci, Burchuladze, others; Orchestra and Chorus of Welsh National Opera, Richard Bonyngne cond. (London 421 412, two CDs, 130 min)

★★★

Although this set was recorded in London in 1987, the generous and informative annotation by William Weaver offers no explanation for the long-delayed release of what is correctly identified as "the final



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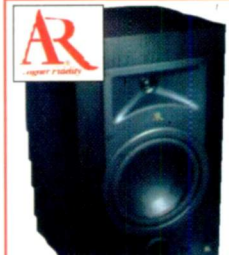
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recorded collaboration between Luciano Pavarotti and Joan Sutherland."

It is a worthy collaboration, perhaps lacking the thrills of certain earlier outings but still enriched by these artists' distinctive touches. The title role is probably not the ideal vehicle for Pavarotti's essentially lyric tenor, for certain junctures call for a weightier sound. But his tone still gleams, his delivery is effortless, and his technique is graceful, though occasionally diminished by inelegant phrase endings. Sutherland's Elvira doesn't throb with the "*fiero sangue d'Aragona*" (fierce blood of Aragon), as is proclaimed in one of her lines, but she is agile and accurate in fast passagework and shines in the ensembles. Her aria "*Ernani, involami*" is a bit cautious but certainly proficient, and the highly ornamented cabaletta is delivered with sovereign ease.

Carlo, the Charles V of history, is one of baritone Leo Nucci's best recorded interpretations, combining an insinuating (and slightly nasal) tone in his amorous episode with a properly regal bearing later on. He is allowed to crown his big Act III aria with an unwritten blazing high A-flat. Bass Paata Burchuladze offers little coloristic variety, but his imperial sonority effectively captures Silva's pride and unrelenting single-mindedness. Conductor Richard Bonyngé incorporates the tenor aria "*Odi il voto*" that Verdi added after *Ernani*'s première and the martial cabaletta that follows Silva's "*Inferlice*" aria, both distinct assets in my view.

George Jellinek

VILLA-LOBOS Complete Guitar Music

Fabio Zanon (*MusicMasters* 67188, 80 min)

★★★★

There are a lot of classical guitarists around, and they all play Villa-Lobos, but none of them comes close to Fabio Zanon. I will stick my neck out and say that he is a better technician than Andrés Segovia ever was, and already his musical equal. This young Brazilian, educated in both Brazil and England, plays his compatriot's difficult music with an easy technical mastery, a high degree of intelligence, and a deep feeling for its popular roots. Listen to the last three of the Five Preludes; these not-so-still waters truly run deep.

The more overtly popular pieces — the so-called *Suite populaire brésilienne*, the *Chôros* No. 1, and the Five Preludes — are surefire, but I have long had my doubts about the Twelve Etudes, which always seemed highly idiosyncratic and not entirely successful. Zanon has changed my mind completely. Properly understood and interpreted, as it is here, this music ranks with the best ever written for the instrument; it is "difficult" only to play properly. Heard as the composer intended — Zanon plays from the original manuscripts, which reveal many things that are lost or distorted in the printed editions — the études provide intense, delightful, exciting, often profound musical experiences.

The disc is a model of how to record classical guitar, with a close but not overwhelming sonority. It also reveals the great beauty

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SHOSTAKOVICH Violin Concerto

David Oistrakh, violin; Philharmonic-Symphony Orchestra of New York, Dimitri Mitropoulos cond.

Cello Concerto Mstislav Rostropovich, cello; Philadelphia Orchestra, Eugene Ormandy cond. (*Sony* 63327) Two premiere recordings, the Violin Concerto from 1956 (mono), the Cello Concerto from 1959 (stereo), remastered and repackaged together in the Masterworks Heritage series.

and the impressive color and dynamic range of Zanon's playing. *Eric Salzman*

COLLECTIONS

LEIF OVE ANDSNES

The long long winter night

Leif Ove Andsnes, piano (*EMI* 56541, 68 min)

★★★★

The Norwegian pianist Leif Ove Andsnes offers us a wonderfully engrossing sampler of his country's piano literature from 1896 to the mid-20th century. In the Op. 66 *Norwegian Folk Songs* and the Op. 72 *Peasant Dances*, we find Grieg, late in life, moving into Bartok territory, especially in his evocation of the resonances of the Hardanger folk fiddle with its extra set of sympathetic strings. Tougher-hewn fare is encountered in the *Fifty Folk Tunes from Hardanger* by Geirr Tveitt (1908-1981). David Monrad-Johansen (1888-1974) is represented by *Pictures from Nordland*, four intensely evocative and magnificently pianistic impressionist essays, and Norway's high priest of atonal (and sometimes 12-tone) music, Fartein Valen (1887-1952), by his bleakly beautiful *Variations for Piano*, Op. 23. Four piano gems from Harald Saeverud (1897-1992), plus an excerpt from his anti-Romantic *Peer Gynt* music, complete the program.

Andsnes's pianism is utterly magnificent, and not just in digital dexterity but more especially in his command of sonority, from the most thunderous chords to barely audible fadeouts. The sound, from EMI's Abbey Road Studio 1, is faultless. Whether you seek to dip into the essence of the Norwe-

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In her recital of uplifting selections on a Conifer CD, Garrett displays her silvery voice in classical hits by Mozart (*Alleluia*), Schubert (*Ave Maria*), and Richard Strauss (*Zueignung*), for example, as well as in such old-time crowd-pleasers as *Bless This House*, *The Holy City*, and *Climb Every Mountain*. I especially liked *La Vergine degli angeli* (Verdi), and she blew me away with Lanza's big number *Because*.

William Livingstone

LESLEY GARRETT

A Soprano Inspired

Britten Sinfonia and Chorus, Ivor Bolton cond. (*Conifer/BMG* 51331, 78 min)

★★★



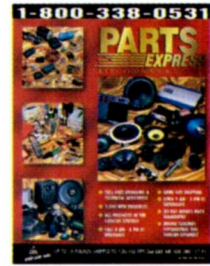
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QUICK FIXES

BACH English Suites Nos. 1, 3, and 6
Beaux Perahia, piano (Sony 60276, 65 min)
★★★★

Perahia provides a good deal of pleasure on this beautifully recorded disc, though the left hand is curiously overemphasized, lending an unexpected degree of heaviness to the music. Andras Schiff, with a lighter touch and all-round more natural balance in his London CD, remains the most persuasive advocate for a piano in these suites. *R.F.*

DEBUSSY Complete Solo Piano Works, Vol. 1

Michel Béroff (Denon 18047, 62 min)
★★★★

In this fine launch of a projected series, Béroff totally rejects both the gossamer-haze and the overmuscular approach to this music, giving us exceptionally persuasive accounts of the suite *Pour le piano*, the *Suite bergamasque*, the *Deux Arabesques*, and seven mostly lesser-known pieces. Excellent sound. *R.F.*

HUMMEL Piano Trios

Beaux Arts Trio (Philips 446 077, 69 min)
★★★★

Johann Nepomuk Hummel, a protégé of Mozart, was a brilliant pianist and a productive, capable, and tasteful composer, with a fine ear and a knack for good tunes. His music is not particularly memorable but always well crafted and unflinchingly attractive. The Beaux Arts players respond to the four trios here (Opp. 12, 35, 65, and 96) with warm-hearted enthusiasm, and the sonic focus is just right. *R.F.*

PUCCINI Preludio Sinfonico; "Le Villi"
Intermezzo; Capriccio Sinfonico
CATALANI Scherzo; Contemplazione
PONCHIELLI Elegia

Philharmonic of La Scala, Riccardo Muti cond. (Sony 63025, 54 min) ★★★★★

These short orchestral works by Italian opera composers make surprisingly pleasurable listening. Two of Puccini's student works and the intermezzo from his first opera, *Le Villi*, foreshadow his gift for melody and luminously colorful scoring. Catalani's *Scherzo*, self-consciously Classical in form, abounds with cheery charm; *Contemplazione* is more elaborately wrought, overlaying haunting melodies in constantly shifting moods. In Ponchielli's *Elegia*, as passionate a piece of orchestral writing as ever came out of Italy, the soaring finale sings as eloquently as any human voice. The La

Scala orchestra performs it and the rest with fire and polish. *J.J.*

SHOSTAKOVICH Quartets
Nos. 14 and 15

Eder Quartet (Naxos 8.550976, 62 min)
★★★★

The 14th and 15th Quartets were written near the end of Shostakovich's life, when he was in frail health. The four superb musicians of the Eder Quartet do themselves proud in every measure of this music, especially cellist Gyorgy Eder. The recording, done in a small church, has an ideal acoustic, combining intimacy and tonal warmth. There are several other fine Shostakovich string-quartet cycles on CD, but at the price, you can't go wrong with this one. *D.H.*

VIVALDI Soprano Cantatas

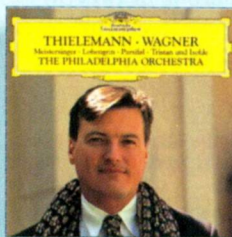
Randall Wong, male soprano;
instrumentalists (Helicon 1032, 60 min)
★★★★

Randall Wong has dug up a batch of lilted cantatas on bucolic themes, mostly lovelorn shepherds sighing after fled shepherdesses, that prove Vivaldi's melodic gifts were as well suited to the voice as to instrumental music. Wong's luminous, flexible voice, seamless throughout a true soprano range, altogether lacks the shrillness that mars the work of so many countertenors. *J.J.*

WAGNER Orchestral Music

Philadelphia Orchestra, Christian Thielemann cond. (Deutsche Grammophon 453 485, 70 min) ★★★★★

Thielemann's somewhat freewheeling interpretive style is well suited to Wagner. The *Meistersinger* prelude has nice heft and moves along in fine style, and the *Lohengrin* preludes are properly seraph-



ic and jubilant in turn. The real excellence comes with the music from *Parsifal* and *Tristan*, which calls for a long sustained melodic line. The *Tristan* prelude here ranks with that of Furtwängler in his prime. Good, honest sound but a shade lacking in warmth and body. *D.H.*

gian soul or just love superlative pianism, don't miss this CD. *David Hall*

JANE EAGLEN Mozart and Strauss Arias
Israel Philharmonic, Zubin Mehta cond. (Sony 60042, 65 min)

★★★★

Jane Eaglen, who has provided her own informative liner notes here, apparently enjoys provocative pairings: her Sony debut CD of Bellini and Wagner is now followed by a disc of Mozart and Strauss. In general, the Strauss arias come off more impressively. The soprano captures Salome's sensuous passion, she soars into the high tessitura of Guntram's and Helena's arias with splendid assurance, and, except for a somewhat unsupported low-lying passage, she brings off Ariadne's "*Es gibt ein Reich*" convincingly. The high-octave outpourings of Mozart's Donna Anna (*Don Giovanni*) and Elettra (*Idomeneo*) are excitingly done, but the recitative preceding Anna's "*Non mi dir*" is rather bland, partly because of surprisingly placid orchestral support. *George Jellinek*

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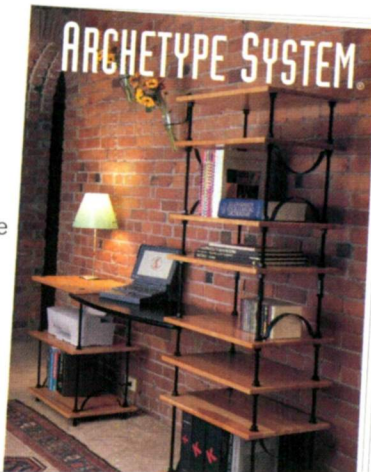
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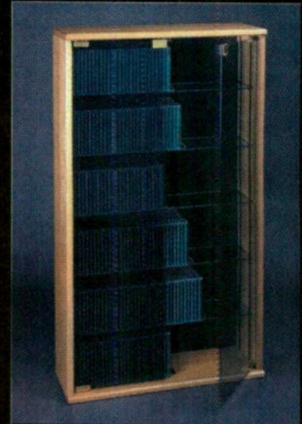
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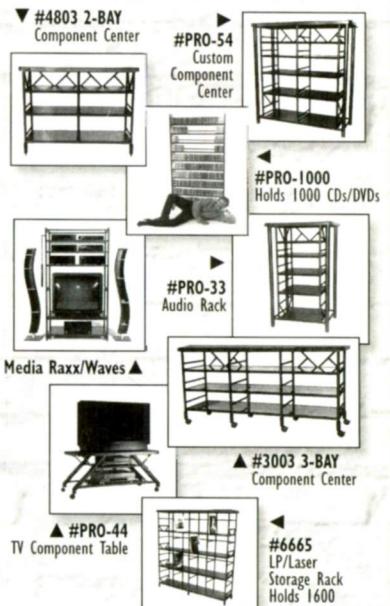
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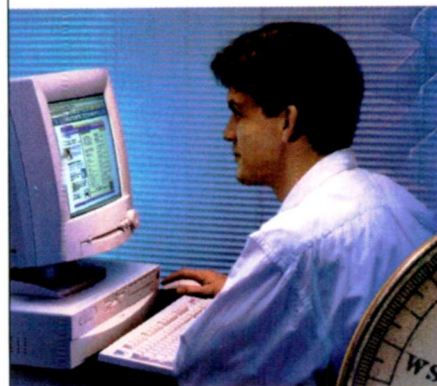
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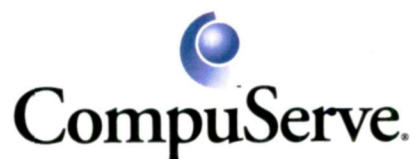
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Rose-Colored Asses

ONE OF THE MORE interesting phenomena surrounding high-end audio is the quartz-locked certainty that hard-core audio nuts will always prefer an older, dirtier A/V format to its newer, better replacement. Part of this has to do with simple skepticism, which is always a good thing. But for the most part, the audio-geek elite will always circle their wagons around yesterday's audio format because it's got 1) rolled-off highs and 2) a cloudier, more distorted midrange.

In print, those two things seem like they'd spell *worse* sound, not better. We all want treble response out to the stars and a midrange so clean you could eat off it, right? But time and time again I've seen serious audiophiles, when they're presented with something newer and better, suddenly go all gooey for the same old format they spent years carping about. All of a sudden the older format is "musical" and "organic," while the new one sounds "bright" and "sterile." It happened with the analog LP and digital CD, and, incredibly, we're seeing it happen again with the analog laserdisc and digital DVD. How anyone could look at these two and seriously declare laserdisc the winner is beyond me, but these people are out there, fighting A/V progress every step of the way.

Now we find ourselves on the verge of a worldwide standard for DVD-Audio, the higher-fidelity, multichannel successor to the CD, and I predict we will not only see bitter complaints in certain quarters of the audiophile press about the "cold," "sterile" sound of DVD-Audio's higher-bit-rate, higher-bandwidth, uncompressed PCM audio, but you will read passionate odes to none other than Dolby Digital (AC-3) as the better-sounding alternative. That's right, good ol' AC-3, once the scourge of the high end for being a compressed-data audio format, will soon be the high end's darling for two very simple reasons: it's got rolled-off highs and a cloudier, more distorted midrange.

I predict this change of heart because I just returned from a very interesting day spent at Dolby Laboratories' new multichannel music studios in Los Angeles, listening to comparisons between 5.1-channel digital recordings pumped first through the Dolby Digital process and

then straight through, uncompressed. And what I heard during these comparisons reminded me uncannily of the differences I hear between the same music on LP and CD, and see between the same movies on laserdisc and DVD.

Dolby invited me to this demo for several reasons. Naturally, the company wanted to show off its new state-of-the-art surround-sound production facility, but it also wanted to set the record straight about its position regarding DVD-Audio. While rival DTS has, in its own bumbling way, tried without success to jockey for adoption as the audio-coding portion of DVD-Audio, Dolby's official position on the matter is refreshingly honest and realistic. The company recognizes and accepts the superior sound quality afforded by uncompressed 24-bit PCM digital audio and supports it for the DVD-Audio

Good ol' AC-3, once the scourge of the high end for being a compressed-data format, will soon be the high end's darling.

standard. Where Dolby Digital fits in, the company says, is in formats like DVD-Video, HDTV, and DSS, where there's a pressing need to squeeze 5.1 channels of high-quality digital audio through a narrow pipeline (bandwidth).

So the comparison between AC-3 and straight PCM digital wasn't meant to show that Dolby Digital playback is indistinguishable from the original audio — even Dolby doesn't claim that. Instead, the point was to show just how little AC-3 audibly affects the audio even as it shaves most of the digital data away. This is significant, because no matter how cheap and plentiful bandwidth becomes, whether on an optical disc or up in the broadcast airwaves, there will always be a place for a good-sounding, data-efficient perceptual-coding format.

Dolby's demo setup was straightforward, with five M&K satellite speakers driven by a stack of big Bryston power amplifiers, augmented by a pair of M&K powered subwoofers fed the same mono

bass channel. Discrete digital recordings were played back on a Tascam DA-38 eight-track digital recorder, and then the same recordings were fed through Dolby's professional AC-3 encoder, decoded back into 5.1-channel audio by one of the company's pro-grade decoding processors, and then fed to the same amps and speakers. The levels of the two sources were matched to insure a fair comparison, but even though I was told in advance which was which, the differences between AC-3 and the uncompressed audio were unmistakable: rolled-off highs and a cloudier, more distorted midrange.

That's not to say that AC-3 fell flat. Far from it — I've said it before and I'll say it again, Dolby Digital does an amazingly good job at squeezing 5.1 channels of high-quality audio into a very small space. When I listen to AC-3 soundtracks on DVD, I marvel at how clean Dolby Digital sounds if the original audio was good to begin with. But in direct comparison with the uncompressed version of the same audio, it's easy to hear the coder's

effect on an audio signal, and it's eerily reminiscent of the coloration I hear on analog LPs. Contrary to the high end's mantra that Dolby Digital adds brightness, I actually heard a slight dulling of the highs when we switched to the AC-3 version. Even more noticeably, the diamond-sharp clarity and focus I heard from the straight PCM digital source was replaced with a less distinct sense of space and fuzzier imaging in the Dolby Digital version.

Clever, those Dolby folks: Even though their demo clearly highlighted the audible artifacts of AC-3, I came away more impressed with the process than before. For a format that throws away most of the original data, Dolby Digital sounds far more transparent than it has a right to. But the big surprise was that the artifacts from this digital coding process don't make it sound more digital but more like analog. That's why I fully expect many audiophiles to prefer AC-3, in their analog-loving hearts, to 24-bit DVD-Audio. Old habits die hard. □

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