

THE WORLD'S #1 A/V MAGAZINE

Stereo Review

NOVEMBER 1997

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Stereo Review

INCORPORATING HIGH FIDELITY

November 1997


Cover: Polk Audio RT1000p towers with built-in powered subwoofers flank the 36-inch Toshiba TV, and a Polk CS275 center speaker sits on top. The Bell'Oggetti B-740 A/V stand also holds a Philips Magnavox DVD400AT DVD player and a Sherwood R-925 Dolby Digital receiver. On screen: Mike Myers and Elizabeth Hurley in *Austin Powers: International Man of Mystery*, now on DVD from New Line Home Video. (Chair courtesy Sofa So Good.)

Photograph by Chris Gould

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Stereo Review, June 97



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Home Theater Magazine, May 97

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Assistant Art Director
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Assistant Editors
DANIEL MANU, JAE SEGARRA

Database Coordinator
SANTIAGO PIZZINI

Editor at Large
WILLIAM LIVINGSTONE

Contributors: Robert Ackart, Chris Albertson, Francis Davis, Rebecca Day, Richard Freed, Will Friedwald, Phyl Garland, Ron Givens, Corey Greenberg, David Hall, Bryan Harrell (Tokyo), Jamie James, George Jellinek, Daniel Kumin, Ian Masters, Brett Milano, Alanna Nash, Tom Nousaine, Henry Pleasants (London), Ken Pohlmann, Parke Puterbaugh, Charles Rodrigues, Eric Salzman, Craig Stark, Rich Warren

Vice President, Group Publisher
TONY CATALANO

Consumer Electronics Group Advertising

VP/Associate Publisher
Scott Constantine

Regional VP/Ad Director, East Coast:
Charles L. P. Watson, (212) 767-6038

Regional Account Managers, East Coast:
Christine B. Forhez, (212) 767-6025
Paul C. Smith, (212) 767-6077

Midwest Ad Manager: Jerry Stoeckigt, (312) 923-4804

Regional VP/Ad Director, West Coast:
Robert Meth, (213) 954-4831

Western Ad Manager: Paula Mayeri, (213) 954-4830

National Record Label Sales Representatives:
The Mitchell Advertising Group (MAG Inc.)
Mitch Herskowitz, (212) 490-1715
Steve Gross, (212) 490-1895

Assistant to the Publisher: Aline J. Pulley
Promotions Manager: Adele Ferraioli-Kalter
Operations Mgr./Ad Coordinator: Linda Neuweiler
Sales Assistant: Yvonne Telesford
Classified Advertising: (800) 445-6066

Production Manager: Mary M. Lewis
Production Assistant: Denise Conlon
Production Director: Michael Esposito
Business Manager: Jonathan J. Bigham
General Manager: Greg Roperti

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President and CEO: David J. Pecker
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Senior Vice President, COO: John Fennell
President, Hachette Filipacchi New Media: James P. Docherty
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LETTERS

DVD and THX

I am close to upgrading to DVD, but so far I've encountered only one title with the THX logo. I've also noticed that most DVDs are in pan-and-scan format instead of widescreen. That's not cool. If the movie was originally filmed in widescreen, the disc should be in widescreen, and if the company decides to make pan-and-scan discs, the widescreen version should be included, too.

Most VHS titles that carry the THX logo are remastered versions of earlier releases, but the laserdisc versions I've seen were THX from the start. Why aren't DVDs being made the same way? Can we expect to find many THX DVD titles later on as well as selectable screen-format versions instead of pan-and-scan only? Why aren't companies taking full advantage of the capabilities that make the DVD format unique? If this keeps up, there would be no point in calling it Digital Versatile Disc.

ALBERTO LANDRON
North Wales, PA

Actually, the official name of the format is just DVD; the letters don't stand for anything. Whether to put widescreen versions on a disc or to follow THX standards (and pay the THX licensing fee) are marketing decisions. So far there are at least ten THX DVD titles, including Twister and Terminator 2. Let your purchases convey your preferences to the movie studios. Mastering a DVD is not a trivial process, and there is a steep learning curve. As software tools to help automate the process become available, more of the DVD format's capabilities will be exploited.

Sampling for the Birds

In Ken Pohlmann's September "Signals" column, he says that some experts consider the 96-kHz sampling rate of some proposed digital formats "to be a waste of bandwidth." I agree. I work at a radio station, and we use computers to record digital audio for broadcast. The computer has five sampling-rate settings: 15, 21, 22, 44.1, and 48 kHz (approximately). I found that only the audio recorded at the 15-kHz rate sounded unusable. Recordings made at the other four settings sounded the same. Could that be because most humans can't hear sounds above 20 kHz?

CD's 44.1-kHz rate is already plenty high, and 96 kHz would be way too high. With all of these numbers being thrown around, is anyone paying attention to whether we can hear the difference? DAVID B. SHERE
Cedar Falls, IA

Elvis Revisionists

On reading Alanna Nash's article on Elvis, "Why the King Still Matters" (September), I was taken aback but not too surprised by the statement attributed to John Lennon,

"Before Elvis there was nothing." It is too bad that Mr. Lennon couldn't witness the success of Bob Wills in the 1930s, Ernest Tubbs in the 1940s, Webb Pierce in the 1950s, or even George Jones in the 1960s. I remember when it started, and Elvis definitely took the music down to a whole new level.

So what keeps the Elvis mystique, or hype, going? *Promotion, promotion, promotion!* The Elvis fans are still trying to hang on to a time that was (or seemed) happier, and they'll buy a piece of whatever is available, real or not, to recapture the moment. Presley will always make good copy, while some of the greatest talent will barely get a whisper. RAY E. STRODE
Brunswick, GA

If it wasn't for the sinister racial climate that permeated every facet of American society in the 1950s, and the outright devious machinations of the American record companies, there wouldn't have been an Elvis Presley. His whole career was built around putting a white man's face on a music idiom originated by black Americans. KEN WILLIAMS
Jacksonville, FL

Ambiophonics Revisited

I appreciate Corey Greenberg's kind words about our book on the Ambiophonics sound-reproduction method in "The High End" in September. It is, however, unfortunate that he behaved like a subwoofer in a china shop when he chose to disparage, unheard and unseen, the one high-end element of the technique, namely, the use of a small absorbent panel placed on edge close to the listening position and extending a few feet toward narrowly spaced front speakers. This technique makes super-realistic music soundstaging readily affordable.

Mr. Greenberg is too young to remember that it was Don Keele, Jr., the preeminent speaker reviewer for STEREO REVIEW's sister publication *Audio*, who first proposed the use of such a sound barrier to eliminate the comb-filtering and Head Response Transfer Function errors caused by crosstalk and the way the 60-degree stereo triangle interacts with a listener's outer ears. Mr. Greenberg neurotically hallucinates about pressing his nose against the edge of this barrier. Mr. Keele's seminal AES paper included a formula (reprinted in our book) that showed you could sit 1 or 2 feet from the edge of the panel and still enjoy the resulting natural imaging and 120-degree soundstage.

Today, you can purchase an attractive, lightweight, folding panel designed for exactly this purpose, called a Reality Buster and available for about \$300 from Echo Busters of Melville, New York. My own barrier was made for me ten years ago by RPG, and, far from having to press my nose against it, I routinely enjoy laserdisc operas and ballets in my domestic opera house,

viewing a great high-resolution picture on an 8-inch LCD color monitor mounted in the ample space between the panel's end and my very comfortable reclining chair.

RALPH GLASGAL
Northvale, NJ

Real-World Speaker Tests

When you test speakers, why don't you also test them as they might be placed by the average, nonaudiophile home user? I would never consider placing speakers 3 feet out from any wall in any room in my house. For one thing, my wife would go ballistic if I even considered such a crazy thing.

I assume that you comply with manufacturers' speaker-placement recommendations in order to compare their specs with your results. But, hey, I want to know how the speakers will perform in *my* home. I really do not care how they sound in yours or the manufacturer's test labs. If a fine-performing speaker degrades radically when placed against a wall, I want to know about it. Conversely, if it still performs adequately, I want to know that, too. OSCAR BOYAJIAN
Chino Hills, CA

Julian Hirsch replies: Like any other user, I cannot always install speakers in the "ideal" location, or even the way the manufacturer recommends. And neither I nor anyone else can tell you how a given speaker will sound in your environment. All I can do is compare each speaker I test with other speakers evaluated in the same manner and try to correlate what I measure with what I hear. If you are significantly more (or less) critical than I am, we may disagree totally. Ultimately, it is your choice, which is why I always recommend listening to speakers at home before buying them, or else buying them only from a dealer who will let you exchange them if they don't satisfy you.

Getting into Audio

Corey Greenberg's August "High End" column, "A Bridge to the Twenty-First Century," got me thinking about how I got into audio. I am 23 and bought my first copy of STEREO REVIEW in August 1980 when I was 7. (I still have it.)

My father did exactly the opposite of dads who try to introduce their kids to hi-fi. He had a very elaborate setup with a room dedicated to it. He never tried to tell me how good it was, and I was not allowed to touch it. I could sit with him in the evening and listen along with him. But I could not touch anything on those shelves, and I did not have any kind of stereo system myself.

Long evenings through my growing years spent with my dad listening to his music and his stereo made me an audiophile, now even more passionate than he is. It also exposed me to a very wide variety of music (I



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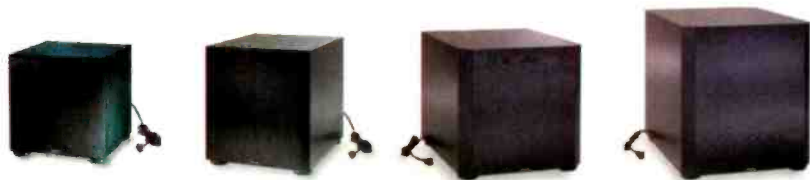
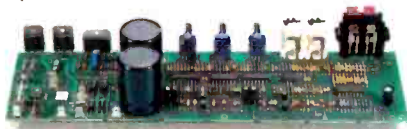
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*- Wes Phillips on the PS-1000,
Stereophile Guide to Home Theater Vol. 2, Number 2*

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was listening to Paganini when I was 9). Best of all, my dad and I became buddies.

HARBIR SINGH
Blacksburg, VA

The Macintosh Way

In August "Letters," Pablo Decena asked if a computer could be connected directly to an A/V receiver, and you said, in effect, "not yet." But the Apple Macintosh 7500, 7600, 8500, and 8600 computers have stereo RCA input and output audio jacks as standard equipment. Recording 16-bit digital audio at 44.1 kHz is true plug-and-play with the Mac system's built-in Simple-Sound software.

RON BREY
Rockford, IL

In September "Letters" you responded to Jim Anderson's question about digital inputs in computer sound cards with a reference to one of that issue's "New Products," a sound card for PCs. Sadly, you forgot to mention DigiDesign's AudioMedia II card, which for years has allowed Macintosh users to transfer digital data between DAT decks, CD players, and their computers. I've been able to use my system to archive out-of-print vinyl onto CD-R just as Mr. Anderson was hoping to do. In addition, I've been able to add EQ and fades, and to remove pops, where necessary. Just because more people have Radio Shack speakers than Martin-Logans doesn't mean Radio Shack speakers are better. The same goes for computers.

BOB WALSH
Schaumburg, IL

Music Surround

In "More Tail Than Sinatra" (July's "The High End"), Corey Greenberg says that surround sound will make music seem more live. I can understand how surround sound with video puts the viewer in the middle of the scene, but at a live performance the listener is not in the middle of the musicians. The sound comes from the front and naturally reflects off the surrounding surfaces.

RONALD V. TANCREDI
Farmingdale, NY

Depending on the artist/producer's vision, surround encoding for music recordings can be used to put the listener in the middle of the musicians or to recreate the natural ambience of the recording venue or performing space. Mr. Greenberg's main point was that the extra surround channels should be used only to reproduce ambience. Reflections of the output from a single pair of speakers in a home listening room rarely produce anything like the ambience of a concert hall or other large space, but a good multichannel surround recording can be quite convincing.

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CIRCLE NO. 43 ON READER SERVICE CARD

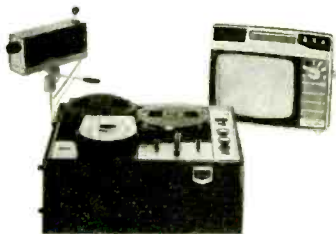
TIME DELAY

30 YEARS AGO



"We are using an 'old' medium (print) to describe, discuss, and criticize a 'new' one (recorded sound)," wrote William Anderson in his November 1967 editorial. "I suspect that we are safe enough for a while, however — or at least until records are released with a musical performance on one side and a critique of it on the other."

An early videotape recorder, Craig's Model 6401, appeared in new products, priced at \$1,035. Accessory equipment included a video camera (\$248) and a 12-inch TV set (\$197). Acoustic Research introduced its first electronic component, a solid-state 120-watt stereo amplifier (\$225).



Craig video equipment, 1967

Features ranged from "Music of the Rococo" to "How Long Should 'Long Play' Be?," in which critic Richard Freed observed, "I suspect no one really insists on 30 minutes per side, and that nobody will kick about an occasional 15-minute side. . . . Eight or 9 minutes, though, might reasonably be considered short weight."

Reviewing Marshall McLuhan and Quentin Fiore's *The Medium Is the Massage*, Peter Reilly wrote, "As one who has been lulled to sleep from time to time by a 'good' book, I can appreciate on one level the (not bad) pun in the title of this disc."

20 YEARS AGO



That's Julian Hirsch on the cover of the November 1977 issue, surrounded by turntables in preparation for his article "Understanding Record Players," where he reported that "the search is on for a [tonearm] material that is both light and structurally solid." He noted that some manufacturers had already started using one such substance: carbon fiber.

Hirsch-Houck Laboratories tested the Mitsubishi DA-P10 preamplifier (\$290) and DA-A15 power amp (\$590), concluding that the two components together made "a beautiful product." The ESS amt 1b speaker system (\$398), with its Heil Air-Motion Transformer tweeter, was "obviously an excellent performer judged both by ear and by test."



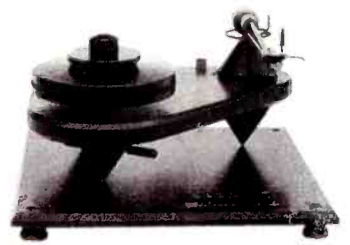
ESS speaker system, 1977

Kate and Anna McGarrigle, who won a 1976 Record of the Year award for their self-titled debut album, told us that their mother was "more serious" about their career than they were. Said Anna: "Yes, she knows who all the critics are. . . . She had Kate's STEREO REVIEW award on her wall. . . ." Kate: ". . . but I took it down and put it on my wall."

10 YEARS AGO



Woman performers dominated the November 1987 issue. Suzanne Vega was interviewed in the wake of her success with "Luka," and two country



Meitner turntable, 1987

singers were praised by Alanna Nash: Patty Loveless, "one of the most promising names" in new traditionalism, and Rosanne Cash, whose *King's Record Shop*, "a stunning mix of the traditional and the progressive," was featured in Best of the Month.

Old formats never die? "I don't ever foresee getting rid of my turntable," mastering engineer Bob Ludwig said in an interview. And tape expert Craig Stark, in the feature "Open-Reel Recording," predicted that "until digital editing devices become economical enough for nonprofessional users . . . the open-reel format will continue to survive."



Rosanne Cash, Rodney Crowell in King's Record Shop, 1987

New products included Meitner's AT-2 turntable (\$1,500) and Yamaha's CDV-1000 combination CD Video/laser-disc/CD player (\$800). Julian Hirsch tested NAD's 150-watt Model 7600 stereo receiver (\$1,498), then the most powerful on the market thanks to its dynamic output of 400 watts per channel and its bridged-mono continuous output of 480 watts. "If any compromises were made in its design," said Hirsch, "we didn't find them."

Steve Simels called *In the Dark* "the first Grateful Dead record you don't have to be a Deadhead to enjoy."

— Ken Richardson

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Now, owning your own movie theater has become a reality. Pioneer Advanced Home Theater combines the power, surround sound and big screen excitement of the theater with the advanced, all-digital performance of DVD (Digital Video Disc) and the huge selection of laserdiscs. Pioneer knows there are

reference standard
THE PALACE

those who want more from home entertainment than just a TV hooked up to a pair of speakers. That's why Pioneer offers complete Advanced Home Theater systems (like the one pictured to the right) that are engineered to bring the impact of the movie experience home.

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Audio/Video 6-Channel Receiver w/ Dolby Digital Surround & MOS Amp.

57" Projection Television

Home Theater Speaker Package

Subwoofer—200 watts

DVL-700

VSX-D906S

SD-P5795W

S-V505

S-W200



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enthusiast experience

THE SAVOY

more through your senses, and less through your wallet. Five speakers deliver super-wide audio range, and a self-powered subwoofer brings full theater thunder to your favorite blockbusters. And villains come to life on a 55-inch, high-resolution screen that features Pioneer's exclusive optical system for images with a natural depth and luster. This precision projection TV also features an adaptive, 3-dimensional comb filter. So you get the clarity you want, with no interference or cross-colors from any video source. It's all part of the Pioneer Advanced Home Theater Experience. And you can bring it all home now!

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Home Theater Speaker Package

55" Projection Television

Subwoofer—200 wctts

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VSX-D606S

CS-H505V

SD-P55A5K

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VX2-DS04S Digital Speed Processor

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There's nothing like an all-out action flick at the theaters. Or is there? Because now you can get the experience at home—without the sticky floors. For less than you'd expect for true home theater, this system will put you smack in the middle of your favorite scenes and have you gripping at

great adventure

THE BIJOU

your chair. Pioneer's DVD/CD player gives you the impressive, all-digital source quality of DVD. Pioneer's receiver with Dolby ProLogic, five speakers and a serious subwoofer, create surround sound that's rich, deep and detailed. So you don't miss any of the subtle nuances in explosions and machine-gun fire. This Pioneer projection TV features a super contrast, fine pitch screen which dramatically improves horizontal resolution, detail and realism. The result? This 50-inch, high-resolution television will bring the helicopters home and keep friends running for cover. It's all part of the Pioneer Advanced Home Theater Experience. And you can bring it all home now!

DVD/CD Player • 9-bit DAC • 500 Lines Horizontal Resolution

50" Projection Television

Complete Home Theater Audio Package w/ A/V ProLogic Surround Receiver
and 6-Piece Speaker Package Including Subwoofer

DV-500

SD-P50A3

HTP-301





PHOTO: JEFFREY M. HARRIS

VSX-D466S**DOLBY PROLOGIC A/V RECEIVER**

- Dolby® ProLogic Surround
- DSP (Digital Signal Processing)
- Pioneer Programmable SMART Remote™
- DSS/DVD Remote Operation Control
- CD Control Capability: Disc +/-, 10-Key Access, Best Selection, Random

- Stereo: 100 Watts per Channel, 20Hz to 20kHz, 0.9% THD at 8 ohms
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- Center: 100 Watts x 1
- Rear: 100 Watts x 2
- 4 Video Inputs/5 Audio Inputs
- Full Discrete Output Transistors on all Channels

VSX-D506S**A/V RECEIVER WITH DIGITAL SIGNAL PROCESSING**

- Dolby® ProLogic Surround
- Pioneer Exclusive 5-D Theater Processing for Enhanced Rear Channel Surround
- DSP (Digital Signal Processing)
- Pioneer "Heads Up" SMART Remote with Preset Codes and Learning Capability
- DSS/DVD Remote Operation Control
- CD Control Capability: Disc +/-, 10-Key Access

- Stereo: 100 Watts per Channel, 20Hz to 20kHz, 0.9% THD at 8 ohms
- Front: 100 Watts x 2
- Center: 100 Watts x 1
- Rear: 100 Watts x 2
- 4 Video Inputs/5 Audio Inputs
- Full Discrete Output Transistors on all Channels
- Preamp Outputs: Center Channel x 1, Subwoofer x 1

VSX-D606S**DOLBY DIGITAL A/V RECEIVER**

- Dolby® Digital & Dolby® ProLogic Surround
- Built-in Dolby® Digital Demodulator for LD AC-3 RF input
- DSP (Digital Signal Processing) 5 Digitally Simulated Sound Fields
- Pioneer "Heads Up" SMART Remote with Preset Codes and Learning Capability
- DSS/DVD Remote Operation Control

- CD Control Capability: Disc +/-, Best Selection, Random
- Stereo: 100 Watts per Channel, 20Hz to 20kHz, 0.9% THD at 8 ohms
- Front: 100 Watts x 2
- Center: 100 Watts x 1
- Rear: 100 Watts x 2
- 4 Video Inputs/5 Audio Inputs
- Dolby® Digital inputs: AC-3 RF x 1, SPDIF AC-3 Digital x 2

VSX-D906S**STATE-OF-THE-ART DOLBY DIGITAL A/V RECEIVER**

- Dolby® Digital & Dolby® ProLogic Surround
- Built-in Dolby® Digital Demodulator for LD AC-3 RF Input
- DSP (Digital Signal Processing) 5 Digitally Simulated Sound Fields
- Pioneer "Heads Up" SMART Remote with Preset Codes and Learning Capability
- DSS/DVD Remote Operation Control
- On-Screen CD Titrer—100 Disc Titrer Capability

- On-Screen Tuner Titrer and Play Capability—30 Station Title Capacity
- Stereo: 100 Watts per Channel, 20Hz to 20kHz, 0.9% THD at 8 ohms
- Front: 100 Watts x 2
- Center: 100 Watts x 1
- Rear: 100 Watts x 2
- 5 Video Inputs/5 Audio Inputs
- Dolby® Digital inputs: AC-3 RF x 1, SPDIF AC-3 Digital x 2

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 - Maximum Power: 150 Watts
 - Magnetically Shielded
- Surround Speakers
 - 4" Cone Full-Range
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- 96 kHz/20-bit Digital-to-Analog Audio Converter

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- Condition Memory
- Multiple Scan/Search Functions
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- 2 Gold Composite Video Outputs
- 3 Digital Audio Outputs

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- 9-bit Video Signal D/A Conversion
- 96 kHz/20-bit Digital-to-Analog Audio Converter

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- 3 Digital Audio Outputs

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- AC-3 RF Output
- Independent CD Tray

- Multiple Scan/Search Functions
- SR Remote Control
- 2 Composite Video Outputs
- 2 Composite Audio Outputs
- Optical Digital Output

CLD-D606**HI-PERFORMANCE COMBINATION CD/LD PLAYER**SAVINGS ON
LASERDISCS®
50%

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- 8-bit Digital Field Memory
- AC-3 RF Output
- Independent CD Tray
- Multiple Scan/Search Functions

- Remote with Shuttle Control
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- 2 Composite Video Outputs
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S-W100**HOME THEATER POWERED SUBWOOFER**

- Bass-reflex Floor Enclosure
- 12" Woofer
- Continuous Average Power Output of 100 Watts, min., at 6.3 ohms, from 30Hz to 200Hz, with no more than 1% Total Harmonic Distortion
- Continuous variable turnover frequency of 50Hz to 200Hz
- Auto Power Circuit Switch

Also available: S-W50 with 10" woofer and continuous average power output of 50 watts, min., at 5.2 ohms, from 30Hz to 200Hz, with no more than 1% total harmonic distortion

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- Built-in 200 Watt Amplifier
- Dual 6" Linear Power Technology Response Speakers
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- Continuous variable turnover frequency of 50Hz to 200Hz
- Auto Power Circuit Switch
- Magnetically Shielded for Video Use

* See back page for more details on special offers.
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- 50" High Performance PTV
- 1000 Horizontal Lines of Resolution
- 0.72mm Screen Pitch
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- Red and Green PURE Color Lens
- Subwoofer Output
- Dual 181-Channel Cable-Ready Tuners

- Picture-in-Picture
- Scan Velocity Modulation (Red and Green CRTs)
- 3-Setting Color Temperature Adjustment
- S-Video Connection
- Remote Control

SD-P55A3**55" PROJECTION TELEVISION**

- 55" High Performance PTV
- 1000+ Horizontal Lines of Resolution
- 0.72mm Screen Pitch
- Inverted Radius CRT With High Resolution Phosphor
- Red and Green PURE Color Lens
- Subwoofer Output

- Dual 181-Channel Cable-Ready Tuners
- Picture-in-Picture
- Scan Velocity Modulation (Red and Green CRTs)
- 3-Setting Color Temperature Adjustment
- S-Video Connection
- Remote Control

SD-P62A3**62" PROJECTION TELEVISION**

- 62" High Performance PTV
- 1000+ Horizontal Lines of Resolution
- 0.72mm Screen Pitch
- Inverted Radius CRT with High Resolution Phosphor
- Red and Green PURE Color Lens
- Subwoofer Output

- Dual 181-Channel Cable-Ready Tuners
- Picture-in-Picture
- Scan Velocity Modulation (Red and Green CRTs)
- 3-Setting Color Temperature Adjustment
- S-Video Connection
- Remote Control

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SD-P50A5**50" PROJECTION TELEVISION**

- 50" High Performance PTV
- 1000+ Horizontal Lines of Resolution
- Tinted Protection Panel
- 0.72mm Screen Pitch
- Inverted Radius CRT With High Resolution Phosphor
- Red and Green PURE Color Lens
- First Surface Mirror
- Subwoofer Output
- Dual 181-Channel Cable-Ready Tuners
- Picture-in-Picture
- Pioneer SMART/Pre-programmed Remote Control
- Scan Velocity Modulation (Red and Green CRTs)
- 3-Dimensional Comb Filter
- Vertical Contour Control
- 3-Setting Color Temperature Adjustment
- 3 S-Video Connections (1 on Front)

SD-P55A5**55" PROJECTION TELEVISION**

- 55" High Performance PTV
- 1000+ Horizontal Lines of Resolution
- Tinted Protection Panel
- 0.72mm Screen Pitch
- 7" Inverted Radius CRT With High Resolution Phosphor
- Red and Green PURE Color Lens
- First Surface Mirror
- Subwoofer Output
- Dual 181-Channel Cable-Ready Tuners
- Picture-in-Picture
- Pioneer SMART/Pre-programmed Remote Control
- Scan Velocity Modulation (Red and Green CRTs)
- 3-Dimensional Comb Filter
- Vertical Contour Control
- 3-Setting Color Temperature Adjustment
- 3 S-Video Connections (1 on Front)

SD-P62A5**62" PROJECTION TELEVISION**

- 62" High Performance PTV
- 1000+ Horizontal Lines of Resolution
- Tinted Protection Panel
- Red and Green PURE Color Lens
- First Surface Mirror
- Subwoofer Output
- Dual 181-Channel Cable-Ready Tuners
- Picture-in-Picture
- Pioneer SMART/Pre-programmed Remote Control
- Scan Velocity Modulation (Red and Green CRTs)
- 3-Dimensional Comb Filter
- Vertical Contour Control
- 3-Setting Color Temperature Adjustment
- 3 S-Video Connections (1 on Front)

SD-P5795W**57" 16:9 PROJECTION TELEVISION**

- 57" High Performance PTV
- 16:9 Wide-Screen Aspect Ratio
- Automatic Screen Mode to Support Multiple Aspect Ratio Formats
- 1000+ Horizontal Lines of Resolution
- Remote Convergence System
- Auto Super Gradation Circuit
- Tinted Protection Panel
- Red and Green PURE Color Lens
- First Surface Mirror
- Subwoofer Output
- Dual 181-Channel Cable-Ready Tuners
- Picture-in-Picture
- Pioneer SMART/Pre-programmed Remote Control
- Scan Velocity Modulation (Red and Green CRTs)
- 3-Dimensional Comb Filter
- Vertical Contour Control
- 3-Setting Color Temperature Adjustment
- 2-Way Speaker System with 6-1/2" Woofers
- 4 S-Video Connections (1 on Front)

* See back page for more details on special offers.
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The Art of Entertainment

NEW PRODUCTS



▲ JVC

The JVC HM-DSR100DU D-VHS digital satellite recorder is a VHS deck with the added ability to record digital MPEG-2 signals from EchoStar's DISH Network system. A built-in DISH Network tuner receives digital satellite broadcasts and sends the MPEG-2 bitstream directly to a D-VHS

tape. Other signals are recorded in analog format through the built-in TV tuner or A/V inputs. The HM-DSR100DU includes a satellite dish and dual LNB (low-noise block downconverter). Price: \$1,000. JVC, Dept. SR, 41 Slater Dr., Elmwood Park, NJ 07407.

• Circle 120 on reader service card



▶ POLK AUDIO

The Polk Audio RT2000p has a built-in powered subwoofer with two 8-inch drivers and a 200-watt amp in a vented enclosure. In the sealed upper chamber are a 6½-inch midrange and a 1-inch polymer soft-dome tweeter laminated with vapor-deposited aluminum and steel. Frequency response is specified as 32 Hz to 25 kHz ± 3 dB and sensitivity as 90 dB. The speaker measures 9½ x 45½ x 16 inches. Price: \$950 each in black woodgrain vinyl, \$1,100 each in rosewood veneer. Polk Audio, Dept SR, 5601 Metro Dr., Baltimore, MD 21215.

• Circle 121 on reader service card



▼ TOSHIBA

The Toshiba SD3107 DVD player features component-video outputs and Spatializer 3D Stereo processing, which creates the illusion of surround sound in systems with only two speakers. Toshiba's Video Black Level

expander circuit is said to increase the picture's overall contrast range, resulting in richer, deeper blacks. Price: \$799. Toshiba, Dept SR, 82 Totowa Rd., Wayne, NJ 07470.

• Circle 122 on reader service card



◀ ADCOM

The Adcom GCD-750 CD player has a rugged, high-mass three-beam pickup design said to be optimized for reliability and superior vibration resistance. There are both balanced XLR and unbalanced RCA outputs and a coaxial digital input. The D/A

circuits can decode standard or HDCD-encoded CDs. Convenience features include full remote control, random play, and repeat modes. Price: \$1,250. Adcom, Dept. SR, 11 Elkins Rd., East Brunswick, NJ 08816.

• Circle 123 on reader service card

Every home theater receiver company is screaming about how great Dolby Digital is. So how come when you turn on their receivers the experience is more like *so what* than *so cool*?

Nobody Does It Better

The answer to that question lies not in technology, but in quality. From our Dolby Digital ready TX-SV444 up to our THX certified TX-DS939 with built-in Dolby Digital decoder, Onkyo quality makes the difference in Dolby Digital.

That means Low-Negative Feedback and Non-Negative Feedback circuitries to minimize noise and distortion, so that a bullet whizzing from the left to the right rear channel makes you duck. It means oversized transformers and capacitors that deliver enough power to handle even the most sophisticated intergalactic weapons of mass destruction.

Onkyo quality is why our new receivers consistently deliver high power levels into low impedance loads, with the greatest possible transparency. And you can hear Onkyo quality, whether you're listening to movies or music.

All you'll hear from our competition is excuses.



May The Features Be With You

All of this extraordinary build quality means Onkyo receivers can bring you an extraordinary range of signal processing features. Like Lucasfilm's Cinema Re-EQ™ and Timbre Matching™ Cinema Re-EQ automatically insures soundtracks are properly equalized for home playback, so that high frequencies that sounded fine in a large theater don't make your fillings melt at home. Timbre Matching heightens realism by seamlessly blending the sound coming from the surround speakers with the front channels. And our top model, the TX-DS939, offers full THX certification.

High Definition DSP is another Onkyo exclusive. The result of the microprocessing capabilities of the Motorola Symphony chip and the programming wizardry of Onkyo, High Definition DSP lets you customize your room acoustics without having to take out a wall.



Get Smart

Until Onkyo invented Smart Scan, system setup and adjustment typically required wading through a confusing sea of presets. By simply rotating the Smart Scan controller, you can instantly select surround modes, parameters, output levels for all channels, delay times, center channel mode, subwoofer on/off and test signals.

Smart Scan is the fast, easy way to dial up perfect surround sound every time. And you'll never get a wrong number.



That's some inside information on what makes a great receiver. Your Onkyo dealer has the rest of the story. Along with a demo you won't forget.

ONKYO®

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Our inside quality doesn't give other receivers an outside chance.

NEW TX-DS939 DOLBY DIGITAL, THX RECEIVER

In the October issue of *Stereo Review*, Cavid Canada reviewed the TX-DS939 and concluded that "at present, no other AV receiver we're aware of is clearly superior. It may not even have any peers." The flagship of the Onkyo line, the TX-DS939 is, quite simply, the finest home theater receiver you can buy.



NEW TX-SV545 DOLBY DIGITAL READY RECEIVER

No other receiver offers the performance level of our TX-SV545 at such an affordable price. And it only gets better as you step up to its big brothers, the TX-SV646 and full Dolby Digital TX-DS747. So no matter what your home theater budget, there's an Onkyo receiver that you can build around.



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THX Cinema, Re-Equalization and Timbre Matching are trademarks of LUCASFILM LTD.

CIRCLE NO. 24 ON READER SERVICE CARD



NEW PRODUCTS



▲ MAGNEPAN

Magnepan's Magneplanar MG10.1/QR speaker (left in photo; Model 3.1 shown at right for comparison) is the company's smallest, measuring 10½ x 53 x 1⅝ inches. A planar-magnetic, dipolar speaker with quasi-ribbon tweeters, it is intended to be used with a subwoofer. Frequency

response is given as 80 Hz to 24 kHz ±3 dB and sensitivity as 86 dB. The speaker is available with an off-white, black, or gray fabric grille and natural or black oak trim. Price: \$1,275 a pair. Magnepan, Dept. SR, 1645 9th St., White Bear Lake, MN 55110.

• Circle 124 on reader service card

▼ AMC

The AMC 3020 stereo integrated amplifier, designed for multi-media applications, has five audio inputs. Its front-panel source selector includes a Mix position that combines the audio from all five inputs simultaneously. Rear-panel controls allow the mixing level of each input

to be preset. Pre-out/main-in jacks are provided on the rear panel along with a separate tape-recording output. Power output is rated at 20 watts per channel. Price: \$250. AMC/Weltronics, Dept. SR, P.O. Box 80584, San Marino, CA 91108.

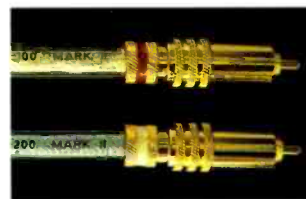
• Circle 127 on reader service card



TERK ▼

The Terk FM Edge antenna has a low-noise amplifier adjustable from 0 to 36 dB gain. It features Dual-Drive Amplification, which is said to reduce noise in the FM signal before boosting its strength. Price: \$40. Terk Technologies, Dept. SR, 63 Mall Dr., Commack, NY 11725.

• Circle 125 on reader service card



▲ LAT

LAT International's IC-100 Mark II (top) and IC-200 Mark II have silver-clad shields around two or four inner conductors, respectively, that are made of oxygen-free, high-conductivity copper. The insulation between the layers is Teflon, and the outer sheath is PVC. Prices: IC-100 MkII, \$79 a pair; IC-200 MkII, \$139 a pair. LAT International, Dept. SR, 317 Provincetown Rd., Cherry Hill, NJ 08034.

• Circle 126 on reader service card



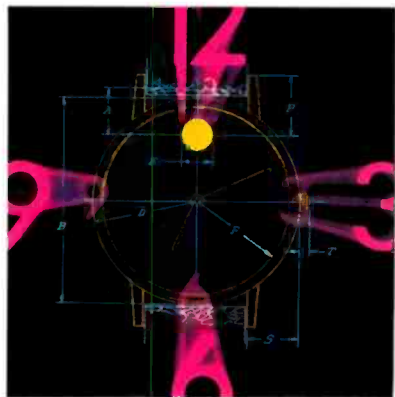
▲ CERWIN-VEGA

Cerwin-Vega's E-312 three-way speaker has a 1-inch ferrofluid-cooled soft-dome tweeter, a 5-inch polypropylene-coated midrange, and a 12-inch paper-cone woofer. Front-panel level controls allow adjustment of the tweeter and midrange. The E-312

measures 33 x 14⅞ x 12½ inches and is finished in black ash woodgrain vinyl. Bandwidth is given as 28 Hz to 20 kHz, sensitivity as 95 dB. Price: \$365. Cerwin-Vega, Dept. SR, 555 E. Easy St., Simi Valley, CA 93065.

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• Circle 129 on reader service card



▲ LUXMAN

The Luxman L-505s integrated stereo amplifier is rated at 70 watts per channel into 8 ohms with less than 0.04 percent total harmonic distortion. It has one balanced XLR line input and six stereo RCA-type inputs. The phono stage has switchable gain so that it can be used with both moving-coil and moving-magnet cartridges. A "record bus"

permits recording a signal source independently of the one being amplified. The amplifier's tone controls are designed to be subtle, with a maximum boost or attenuation of 8 dB. A tone-defeat mode provides total bypass. Price: \$2,600. Luxman, Dept. SR, 915 Washington Ave. S., Minneapolis, MN 55415.

• Circle 131 on reader service card

SCOSCHE ▶

The Scosche Soundkase SKSB-12 seatback CD organizer holds twelve CDs, a portable player, headphones, and batteries in separate compartments. A 12-inch pocket is provided for other items. The nylon organizer can be folded into a carrying case. Price: \$29.95. Scosche Industries, Dept. SR, 5160 Gabbert Rd., Moorpark, CA 93021.

• Circle 132 on reader service card



TRIBUTARIES ▲

The Tribute C2S from Tributaries, when connected between a video source and a monitor, can convert composite-video signals to S-video signals to simplify component hookup and source-switching. The converter/cable, which requires no power source, separates the chroma and

luminance information from a composite signal using passive filters. Screwdriver controls are provided for adjusting the luminance and chroma channels. Price: \$100. Tributaries, Dept. SR, 1307 E. Landstreet Rd., Orlando, FL 37824.

• Circle 130 on reader service card



▲ AZTEC AUDIO

Aztec Audio's Silencer, which plugs into a modular telephone jack, can monitor one or two phone lines and automatically mute an audio system connected to it when either line is ringing or in use. The Excluder accessory allows extension phones or a fax or modem to be

used without triggering the Silencer. Both products are powered by the phone line. Prices: Excluder, \$34.95 (one line), \$49.95 (two lines); Silencer, \$49.95. Aztec Audio, Dept. SR, 13236 N. 7th St., #4-252, Phoenix, AZ 85022.

• Circle 133 on reader service card

SONY

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NEW PRODUCTS



▲ YAMAHA

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it were a floppy diskette. Prices: CDR400ti-PC (internal SCSI for PC), \$799; CDR401ti-PC (internal IDE/ATAPI for PC), \$799; CDR400tx-PM (external SCSI for PC or Macintosh), \$899. Yamaha, Dept. SR, 6600 Orangethorpe Ave., Buena Park, CA 90622.

• Circle 134 on reader service card

BELLOGGETTI ▶

The Bell'Oggetti SP-100 speaker stand is made from heavy-gauge metal and features removable spiked feet. Height is adjustable from 31 to 43 inches, and it can hold speakers weighing up to 100 pounds. Price: \$180 a pair. Bell'Oggetti, Dept. SR, 711 Ginesi Dr., Morganville, NJ 07751.

• Circle 135 on reader service card



PSB ▶

The PSB Stratus Goldⁱ, a refined version of the popular Stratus Gold vented three-way speaker, has a 10-inch woofer with a treated-felt cone, a 6½-inch midrange with a polypropylene cone, and a 1-inch aluminum-dome tweeter. Frequency response is specified as 31 Hz to 21 kHz ±3 dB and sensitivity as 90 dB. The Stratus Goldⁱ measures 43 x 12½ x 17 inches. Price: \$2,399 a pair in black ash or dark cherry, \$2,699 a pair in high-gloss black finish. PSB, Dept. SR, 633 Granite Ct., Pickering, Ontario L1W 3K1.

• Circle 137 on reader service card



▲ SOUND RELATED TECHNOLOGIES

The IBS-10 subwoofer from Sound Related Technologies features a water-filled bladder that is said to boost bass response and produce tactile vibration. Two opposing 10-inch woofers generate sound waves that act on the water. The resulting vibration is then coupled to the floor on

which the enclosure rests. The IBS-10 has a nominal impedance of 4 ohms. When filled with 11½ gallons of water, it weighs 172 pounds. Price: \$999. Sound Related Technologies, Dept. SR, 228 N. Lynnhaven Rd., Suite 130, Virginia Beach, VA 23452.

• Circle 136 on reader service card



▲ PROTON

The Proton AS-2620 Dolby Digital A/V preamplifier has a master volume control, and each of the six channel levels can be stepped up or down 1 dB at a time with a range of ±9 dB. Surround-channel delay can be set from 0 to 30 milliseconds and center-channel delay from 0 to 5 milliseconds.

The AS-2620 has five analog A/V inputs, an S-video input/output, and four digital inputs: one optical, two coaxial, and one RF. A full-function remote control is supplied. Price: \$999. Proton Dept. SR, 13855 Struikman Rd., Cerritos, CA 90703.

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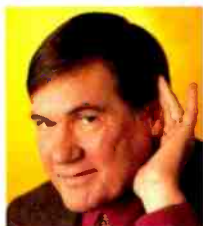
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AUDIO Q & A

IAN G. MASTERS

DVD Connections

Q My receiver has pre-out and main-in jacks for all channels. I plan to buy a DVD player with a built-in Dolby Digital decoder. Can I connect this to my present receiver? If so, do I put the receiver in the Pro Logic mode or stereo or what?

MANUEL GRACIA
Anaheim, CA

A You will be able to use such a player with your receiver if it has pre-out/main-in facilities for five or six channels, which is likely only if it is a recent "Dolby Digital-ready" model. Just how you configure it depends on how it patches the pre-out jacks to the main-in jacks. If it uses U-shaped metal jumpers that you have to remove to get at the amplifier inputs, it matters little how you set the receiver because you will have disconnected everything but the volume control and amplification stage. That means you'll have an awkward task of repatching if you want to use the receiver's Pro Logic circuitry or listen to other sources. Newer receivers will let you switch between the internal circuits and an external Dolby Digital decoder, whether it's built into a DVD player or freestanding.

Speaker Equalizers

Q My speakers include a dedicated equalizer connected to my receiver. To upgrade them to digital, one dealer told me, I could replace the equalizer with one designed for the next generation of the speaker, while another said I could use any equalizer. Who's right? Also, I notice that when I use any other speakers with the receiver, the equalizer seems to remove the midrange. Is that normal?

RANDY HIRSCH
APO Germany

A Unlike conventional graphic equalizers, the dedicated equalizers supplied with speakers such as yours are not intended to be used to tame room problems or to create a more dramatic sound. Instead, they are specifically designed to offset deficiencies in the speaker's inherent frequency response. If, for example, the speaker inherently has a midrange that's louder than the frequency extremes, the equalizer will have a corresponding response sag to flatten things out. That's why when you send the equalized signal to a speaker that doesn't need that correction, it produces the response anomaly you hear.

Dedicated equalizers are very carefully matched to the speakers they are intended to work with (or at least they should be), so us-

ing any other equalizer is likely to degrade the sound rather than improve it. The only exception would be if an upgraded version of the speaker had the same response and thus needed the same correction. That would be very unlikely, but if it did happen, the new equalizer wouldn't work any better than the old one.

Incidentally, it's a myth that you need to upgrade your speakers for digital sound — unless you intend to play your music so loud that there's a danger of blowing up your equipment. Speakers that were appropriate for high-quality analog sources will handle digital ones just fine.

Magnetized CDs

Q Is it true that I should store my CDs some distance away from my speakers, and if so, how far away and in what direction? And is it only the speakers that can be harmful or other components as well, such as the CD player itself?

AMGAD ELGALI
Powder Springs, GA

A Speakers, TV sets, and power amplifiers can emit strong magnetic fields, which may degrade the signal on tape cassettes that are stored too close, but not CDs. A compact disc is made up of plastic, aluminum (or gold), and a bit of ink, none of which are affected by magnetism. And even if, by some chance, a disc did pick up some magnetism (in the metallic components of some exotic ink, if such a thing even exists), it would have no effect because magnetism plays no role in the way data is stored on a CD.

To Sub or Not to Sub

Q I would like to use a subwoofer in conjunction with my planar speakers, but their manufacturer advised me not to because using a sub with an electronic crossover would "muddy up the bass" of the panel speakers. Is that really likely to be a problem?

RICK DESALVO
Bath, NY

A Since planar speakers are typically weak at reproducing bass frequencies, using a powered subwoofer with them is often a good idea. However, some powered subwoofers have not only a low-pass filter that restricts the signal fed to its driver to the lowest octaves, but also a high-pass filter that removes the low frequencies from a line-level signal that's fed back to the main amplifier. The purpose is to save the main amplifier from having to amplify the power-hungry low bass. Insofar as this alters the

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low-frequency characteristics of the main speakers, it might be said to "muddy up" their sound. I'd expect the effect to be minimal, if it were even audible at all, but if you don't want to take the chance, you could simply not use the high-pass feature and run the main speakers "straight" and the sub in parallel. Positioning the subwoofer and setting its level and crossover point properly will be vital, but those things always are.

Power Ratings: Watts Up?

Q I have often heard that when it comes to car stereo amplifiers, not all models are what they appear to be, and that an amp rated for a total power of 400 or 500 watts may be capable of producing only 100 watts. If that's the case, how can I be sure I'm getting all the power I'm paying for? D. MAN Biddelford, ME

A Wattage numbers on their own are meaningless. Even crummy little amps can put out high power for short bursts, especially if you don't mind gross amounts of distortion or a very narrow bandwidth.

Makers of amplifiers for home use have long been required to state extra details when specifying power output, and while things are freer in the world of autosound, the better manufacturers specify their products in a similar way. The more such details are provided, the more you'll be able to tell what you are getting.

First, the rating should be for continuous output rather than just musical peaks. It's relatively easy to produce high-power spikes, but hard to crank out the same level over time without burning up. If the specs mean continuous power, they will say so.

Total harmonic distortion tends to rise as an amplifier reaches its upper limit, so if an amp is specified to put out a certain number of watts but at a high distortion level — 10 percent, say — then the usable clean power will be much less. And home units must specify the frequency range over which the output is valid. Bass is much more power-hungry than the rest of the spectrum, so if an amp is specified for a range that starts at 40 or 50 Hz, rather than 20, chances are that its overall rating would drop if the bottom octave were taken into account. And beware of specs that mention only a single frequency, such as 1 kHz. The load impedance used for the measurement should be stated too, as lower impedances may produce bigger numbers but not have much to do with real-world operation.

The rating should also be of power per channel, both (or all) channels driven. The first is desirable but not absolutely necessary: if you know the spec means total power, you can always divide by the number of channels. But all channels *must* be driven because, in normal operation, one power supply feeds everything. If you leave one channel silent, the other one can "borrow" some of its power and produce a higher output.

A typical home power spec would read: "100 watts per channel continuous into 8 ohms, 20 Hz to 20 kHz, both channels driven, with total harmonic distortion no greater than 0.01 percent." The closer a car amplifier comes to that formula, the better you will be able to judge it.

Treating 78s


Q I have some old 78-rpm records and a three-speed turntable. Is there a surface treatment I can use to get the best sound from these oldies? MARK M. KIRKHAM Salt Lake City, UT

A First, since 78s are heavy, awkward, and brittle, I suggest you try to get one good play from each disc and *tape* it for future listening. Repeated playings of the old shellac recordings are a dicey proposition. Second, if the records have more than a minimal amount of wear, you won't get sound quality that is much better than just okay by today's standards.

But there are things you can do to optimize quality for that one good pass. Start with a stylus designed specifically for 78-rpm playback. You might be able to buy one for your present cartridge (be prepared to pay quite a few bucks for it), or you might have to use a new cartridge. If so, it need not be a super-quality model, given the nature of the material it will be called on to handle.

Next, devise a way to record in mono so

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that any out-of-phase surface noise will be canceled out. Simply switching the amp to mono won't do it, as that still feeds stereo to the tape outputs. Bridging the hot leads right at the cartridge works, or use back-to-back Y connectors between the amplifier and the tape deck to accomplish the same thing.

Since there's not much in the top octaves on 78s but noise, using a graphic equalizer to remove everything above about 5 to 8 kHz can be effective. I've also had some success using cheap tape with relatively poor treble response; this can be enhanced by overbiasing, which further rolls off the highs. If your tape deck doesn't have a continuous bias-trim control, try simply using the Type II bias position with Type I tape (if your deck's switching allows this). You'll have to experiment a bit to get everything right.

Finally, dampen the surface with distilled water before playing, and make sure it stays wet. Avoid using any other liquid. Some liquids — especially anything containing alcohol — will dissolve the shellac. And make sure you clean the stylus after every play, or accumulated dust will dry onto it with the consistency of concrete.

Nonrecording MiniDisc

Q In addition to a MiniDisc recorder, my receiver is being fed by a turntable, a CD player, and a VCR. I can record from any source, including MD, to cassette, and from any source except cassette to MD.

When I try to copy a cassette to disc, I can hear the tape fine when I activate the tape-monitor switch, but what goes onto the disc is whatever source I had selected before switching to tape. What can I do to be able to copy my tapes to disc?
RAY VERNO
North Providence, RI

A You don't say, but I assume your receiver has two tape-monitor loops: apparently you have the MiniDisc recorder connected to one loop and the cassette deck to the other. A few receivers enable you to record from one tape deck to another in either direction, but most only allow one-way dubbing, probably on the assumption that most people copy cassette to cassette and therefore don't need to be able to go both ways. Your receiver seems to be of that sort.

To understand what's going on, you have to envision what a tape-monitor switch does. In a one-loop system, whatever source has been selected by the main input control is fed through the record/tape-out jacks to the recording electronics of a tape deck. At any time, regardless of what's happening later in the chain, the deck can record that source. Either that signal as it passes through the deck's electronics, or an off-tape signal if the deck is in the play mode, is fed to the play/tape-in jacks. The monitor switch selects either this signal from the recorder, or the input source directly, and sends it to the rest of the receiver.

With two loops, they're usually wired in

series: Whatever the Monitor 1 switch selects is fed to the record/tape-out jacks of Loop 2. The Monitor 2 switch selects and passes on either what's passing through the second machine or the signal being fed through by Monitor 1.

With both switches in the Source position, the main input signal is fed simultaneously directly to the amplifiers and to the record/tape-out jacks of both loops; it could be recorded by either the MD deck or the cassette recorder. With Monitor 1 in the Tape position but Monitor 2 set to Source, the main inputs are switched off and the output of the MD is fed to Monitor 2, where it can be dubbed to tape. But with Monitor 2 in the Tape position, the cassette deck's output feeds only downstream to the amplifiers, not back to the MD deck, whose input is still connected to the main input control. Whatever is selected there, it will record.

Simply exchanging the machines — MD to Loop 2, cassette to Loop 1 — would allow you to do what you want, but not dub MiniDisc to cassette. Alternatively, temporarily connecting the output of the cassette deck to a line-level input other than a tape input would let you dub it to disc.

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

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Pick a Card, Any Card

BY KEN C. POHLMANN

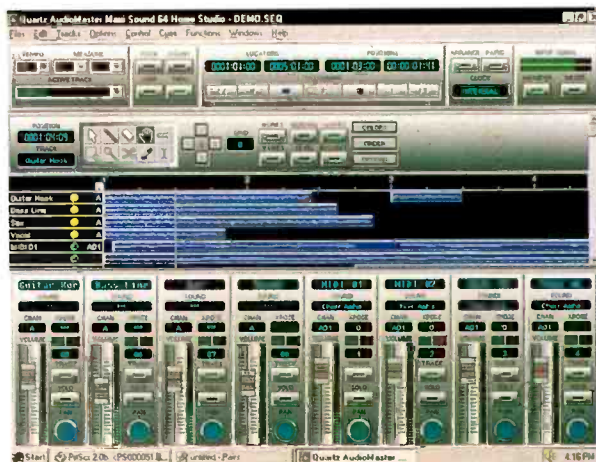
In the beginning, Edison created analog audio, and it was good. Then, about a hundred years later, the audio world suddenly reinvented itself. The advent of powerful micro-computer technology, coupled with CD technology, initiated a thousand-fold increase in the complexity of audio systems. Audio circuits that were fabulously expensive or downright impossible to build in the analog world suddenly appeared in low-cost digital chips mounted on plug-in cards. When installed in a personal computer and controlled by software (a concept essentially absent in the analog world), these cards can transform a computer into an audio powerhouse. Today, a properly equipped PC can perform audio tasks that would have been brutally difficult to achieve twenty years ago, and simply unimaginable eighty years before that.

All of the credit goes to sound cards. On the face of it, they are relatively uninspiring circuit boards mainly populated by chips and connectors. Traditional audiophiles, more accustomed to appraising a component by its weighty heft or the gleam of its brushed metal front panel, may be underwhelmed. However, it would be a mistake to underestimate the muscle hidden in these lightweight, low-cost cards and the software that animates them.

Although not all sound cards are created equal, high-quality cards contain a formidable array of processing capability and can perform a wide range of audio services. For example, a good sound card will let you play back an audio CD recording of Beethoven's Ninth Symphony, make your own acoustical recording of it, play back a MIDI-synthesized version of it, create your own synthesized version,

and control all the input and output levels of that variety of sound sources — and those are just the basics.

For example, consider the following sound cards for Windows-platform computers: the \$199 Creative Labs Soundblaster Awe 64 Gold, the \$299 Guillemot Maxi Sound Home Studio Pro 64, and the \$500 Turtle Beach Multisound Pinnacle, \$549 with digital input/output (I/O). These cards are representative of today's new breed of



Quartz Audio Master SE is the main audio and MIDI-sequencing program included with Guillemot's Maxi Sound Home Studio Pro 64 sound card (\$299).

sound card — a far cry from the video-game noise makers that formerly defined the industry.

Although there are many differences between the three cards, they all offer a similar array of features. They contain stereo analog-to-digital (A/D) and digital-to-analog (D/A) converters so that analog audio signals can be input and output from the computer's storage devices. The converters are full-duplex, allowing simultaneous recording and playback. In some cases, a digital input or output is also provided. Signals can be digitized as 16- or 8-bit samples, in stereo or mono, over a variety of sampling frequencies ranging

from 5 kHz to 44.1 or 48 kHz. (In many cases, the sampling frequency is determined by the particular software application.)

The cards also provide synthesis capabilities; this is needed, for example, to create sound effects when playing MIDI files or when playing games. All three cards support sample-based wavetable synthesis, which allows synthesis and playback of both music and sound effects via software. The Creative Labs card also supports physical model-based waveguide synthesis, in which mathematical models are used to emulate the sounds of musical instrument.

Each card differs somewhat in its specific synthesis ability. The Guillemot card, for example, supports 128 wavetable instruments, with 189 variation sounds and 9 drum sets using its onboard 4 megabytes (MB) of RAM. Moreover, sixty-four voices are supported, with multitimbral capability on sixteen channels. Each of the cards has a MIDI interface so that you can connect it to an external MIDI instrument such as a keyboard. Finally, the Guillemot and Creative Labs cards contain built-in 3-D stereo-enhancement circuitry. These proprietary systems, in greater or lesser degree, increase the depth and breadth of the stereo soundstage and broaden the "sweet spot" where full stereo separation is perceived by the listener. The Guillemot card also provides surround-sound speaker outputs.

An electret condenser microphone (the same mike, in fact) is included with both the Creative Labs and Guillemot cards. It's certainly useful for capturing acoustical sounds. Perhaps most interesting, how-

ever, is its use in Internet phone applications in which you can use a microphone, speakers, and a modem to talk to anyone else (with the same technology) via the Internet. Both cards provide Internet phone software.

From a hardware standpoint, aside from the chip collection itself, each of these cards sports a variety of connectors either on the card's mounting bracket or on the printed-circuit card itself. Generally, these cards provide analog line-in and line-out jacks, a microphone input, and a game-pad/joystick/MIDI connector. The Creative Labs card has an SPDIF output connector, which can be attached to a sep-

arate SPDIF jack mounted on a separate metal bracket. The Guillemot card uses a separate card to add both digital input and output. The Turtle Beach card can do the same, but the add-on card must be purchased as an option. Other common inputs and outputs include a CD-ROM-drive audio connector, a modem connector, and a PC speaker output. The Guillemot and Turtle Beach cards also have D-RAM upgrade connectors. These allow you to augment their onboard memory via SIMM daughterboards (up to 20 MB total on the Guillemot card and up to 48 MB total on the Turtle Beach card). Extra memory may be needed, for example, if you want to load in .WAV files and convert them into custom MIDI instruments, replacing the onboard instruments.

Each of these cards is designed to plug into a PC (or PowerPC) expansion slot; like many other PC cards, these demand a 16-bit ISA card slot. Although they can chug along with an Intel 486 processor, a Pentium processor is recommended. Hardware installation of these cards is quite simple. Simply pop the card into an empty expansion slot (separate or optional I/O connectors may consume a second slot position) and connect the various peripherals as needed. These may include a CD-ROM drive and, of course, an audio playback system.

Of course, a sound card must be run with the appropriate software, normally bundled with the card. The most basic part of the software-install regimen is setting up the device drivers needed to control the various components on the sound card. Most users will install the software into a Windows 95 environment. The hassle is minimal (but not always completely painless) thanks to the Windows Plug and Play (PnP) feature, which automatically detects the components on the card and either automatically installs, or prompts you to install, the required device drivers. Moreover, PnP figures out all the I/O addresses, interrupt lines, and DMA channels so that the card will not conflict with other devices.

The next step is installation of the applications software, which is also bundled with the cards. All of the cards contain a mixer application so that you can mix signals from a CD player, line input, microphone input, and so on, then route the mixed signal to an output port. You'll also find a comprehensive audio control system that lets you adjust the volume of each

source and speaker output. Although there is a seemingly endless supply of specialized audio-software packages, you'll probably want to start with the programs bundled with your sound card; each card provides waveform-editing and synthesis software.

For example, the Turtle Beach card is accompanied by WAVE SE II software, which lets you record, edit, and otherwise go crazy with waveform audio. Specifically, WAVE provides a four-band parametric equalizer, fast-Fourier-transform (FFT) analysis, graphic waveform drawing, sample-rate conversion, crossfading, and effects such as echo, flange, chorus, and distortion. The Sierra Audio Rack software provides familiar home stereo controls for the sonic aspects of your PC; using on-screen buttons and faders, you can play back CDs and MIDI files, mix sounds, and so on. The Mouse Player software displays a

**Anyone who says that
all PC sound cards sound
bad probably hasn't
bothered to listen to one
of them recently.**

music keyboard on the screen and lets you use it to play MIDI instruments. Turtle Beach also throws in a copy of Digital Orchestrator Plus, which merges a MIDI sequencer with multitrack audio recording.

After you've mastered the bundled software, you might want to upgrade to more sophisticated third-party software. For example, Sound Forge provides comprehensive sound editing and CD-R mastering software, and Cake-walk is great for MIDI sequencing.

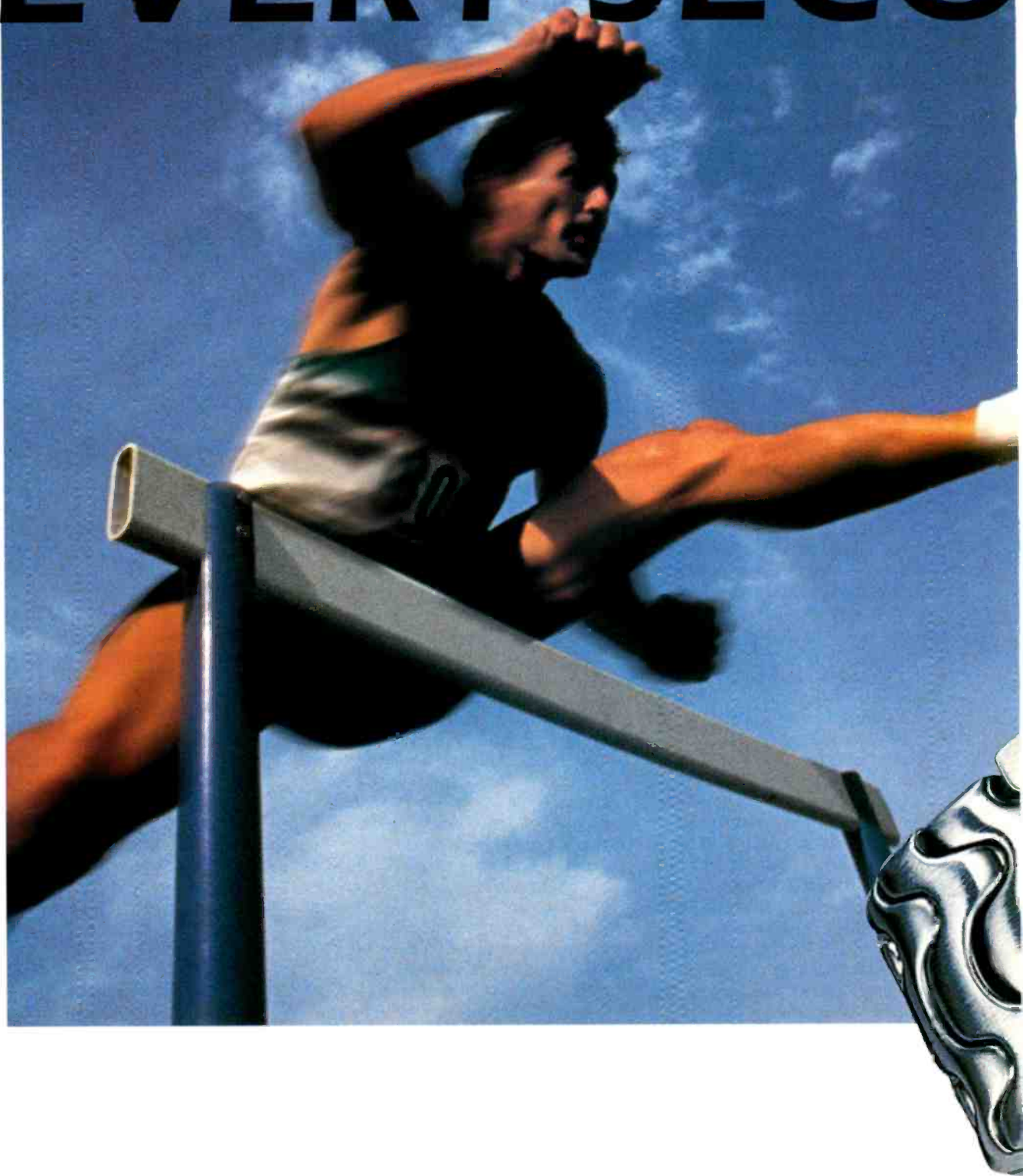
In the old days (several years ago), many consumer sound cards used questionable A/D and D/A converters and casual circuit-board design. As a result, signal quality was not always pristine. However, today's sound cards are quite respectable. Even the cheapest card of this trio, the one from Creative Labs, fared quite well on the test bench when installed in a Dell 166-MHz Pentium PC. For example, a test CD yielded a playback line-out measurement of 0.008 percent total harmonic distortion plus noise (THD+N), an A-weighted signal-to-noise ratio

(S/N) of 86.4 dB, channel separation of 79.2 dB, and a frequency response of +0.0, -0.5 dB from 20 Hz to 20 kHz. In a record and playback test, the card delivered 0.013 percent THD+N, an A-weighted S/N of 80.4 dB, channel separation of 78.2 dB, and a frequency response of +0.0, -3.4 dB. Anyone who says that all sound cards sound bad probably hasn't bothered to listen to one recently. In fact, sound cards use circuits and construction techniques that are similar to those found in home CD players, and they perform similarly to many CD players.

If you're not especially interested in audio, then all CD players seem about the same. However, as you dig deeper, you'll begin to discover the differences. Likewise, if you're not really into audio, then all sound cards seem the same. Of course, they're not. As with CD players, the different price points generally define both signal quality and features. In addition, different cards emphasize different features; for example, some cards are better for recording and playback, while others offer more extensive synthesis features. The Creative Labs Soundblaster Awe 64 Gold card demonstrates that even budget cards can deliver clean sound and handle both waveform and synthesis chores. The Guillemot Maxi Sound Home Studio Pro 64 card adds the all-important feature of digital input and output; if you are serious about moving audio through your computer, you'll need this feature. The Turtle Beach Multisound Pinnacle card does all of the above (with the optional digital I/O) and adds 20-bit converters, a Motorola DSP56002 digital signal processing chip, and a powerful Kurzweil wavetable synthesizer; if you're looking for serious MIDI synthesis capability, this card will deliver it.

Powerful microprocessors, recordable CDs, Internet audio, high-quality synthesis chips, and multimedia technologies galore are transforming today's audio scene. Although the days of mismatched and inadequate hardware and software are not wholly behind us, advances such as Windows Plug and Play take the sting out of sound-card installation. Day-to-day operation is reliable, and sonic performance is quite good. If your PC has an extra slot, a card such as one of those evaluated here will open your door to the world of desktop audio and the modern way to perform audio recording, editing, analysis, and synthesis. □

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SIGNALS

KEN C. POHLMANN

The Next Generation

My dad was a college professor. Therefore, of course, when I was growing up the last thing I wanted to be was a college professor. That's normal (I think), because it's the nature of youth to rebel and go their own way. However, now that I've been a faculty member for more than twenty years, I am forced to admit that I have followed in my father's footsteps.

It doesn't seem possible that a temporary job intended merely to add an authoritative line to my résumé would instead consume my résumé, but that's the case. For a time I took consolation in my dad's being an expert in sociology, while my forte is music engineering. That difference in our respective course descriptions seemed to mitigate that I had otherwise copied his career. However, as if rising out of some mysterious genetic sequence, I am finding myself taking an increasingly active interest in sociology.

Specifically, sociology studies the organization and processes of change in our society. If the price of avocados increases by one cent, sociologists (using demographics) can estimate the increase in new car sales in California. In other words, sociologists can look at seemingly trivial details and predict a much larger picture. Now, I'm certainly not an expert in this sort of thing, but from my college vantage point, I think I've stumbled onto a few interesting ideas about the next generation of electronics consumers.

My first insight occurred about eight years ago. Few people outside of academia had heard of the Internet, and the World Wide Web was still a twinkle in the eye of Tim Berners-Lee. I was doing some audio signal processing on a computer (a fairly progressive thing at the time), and I asked my students to fetch me a short audio recording so that I could test the program. Now, there was a complete recording studio next door as well as an archive of a thousand tapes downstairs. However, my students elbowed me away from the mouse and within moments had logged onto a computer in Australia and downloaded an audio sample for me. At that moment I glimpsed the future. The power of networks hit me like a brick. Moreover, I saw that these kids

correctly understood that networks are the most expedient way to move data — downloading music from Australia is easier than walking 10 feet into the next room to grab a tape.

Since then, I've surveyed the University of Miami for more signs of the future. Admittedly, my music-engineering students are hardly typical; they enjoy top SAT scores and are good musicians as well. But they represent the cutting edge, and many other kids will follow where they go. Clearly, their generation is very different from mine. Campuses were formerly filled with talk of stereo equipment and whose speakers were bigger. Today, stereo gear is no longer the yardstick of social status. Instead, the PC is the meter-

My generation didn't have to choose between a computer and a stereo system. But this generation has a choice, and it seems to favor computers.

stick of status. Macintosh is out, and anything less than a 266-MHz MMX Pentium is passé.

Moreover, they crave networking — and fast connections are a must. They sneer at telephone modems and refuse to touch them. They demanded that each dorm room have a dedicated 10-megabit-per-second (Mbps) Ethernet connection jacked into a fiber-optic backbone, and the university wisely complied. It is speed that matters (everyone is drooling over the 450-MHz MMX Pentiums coming this spring). Whereas big speakers were formerly desirable, today size is a distinct negative. Kids want their PCs to be as portable as possible, and the same goes for their stereos and speakers. (Professor Bose, I am sure, knows this and is thoroughly delighted.)

It seems odd, and it still amazes me, that a group of young musicians (and future professionals in the audio industry) do not spend most of their time talking about stereo equipment. Instead, the hot topic is anything and everything associated with computers and audio. These students use computers throughout the day to study and learn and they also rely on

computers for their entertainment. Video games and other pastimes are computer-based, and they also turn to computers for music listening. Because it is an utter necessity in their lives, most of their income goes toward computers. Because music is very important to them, they make sure their computers can reproduce high-quality music through a very high-quality sound card and small but accurate loudspeakers. My generation didn't have to choose between a computer and a stereo system. But this generation has a choice, and it seems to favor computers.

Similarly, I've seen a generational shift away from hardware and toward software. Computers are esoteric boxes of chips designed by specialists. The real excitement in computing, the reason why a 450-MHz processor is attractive, is the way a computer runs software. Students have thrown aside soldering irons; few of them would consider building a hobby-electronics kit. Instead, they grab a mouse. They are extremely knowledgeable about commercial computer programs and are anxious to own the latest versions. Moreover, with an eye toward their own careers, they write their own programs. Whereas my generation was content with a few lines scrolling down a green screen, these kids have artful eyes and design impressive

GUIs (if you don't know what that means, you're not a member of their generation). They are bored by resistors, gobble up PCs, and look forward to virtual reality. Admittedly, the students I interact with are gearheads, and they are more technologically inclined than their peers. But their preoccupation with computers is another sign of the future. Traditional companies such as stereo-hardware manufacturers and record labels must understand that in today's world, music and other entertainment exists simply as files of binary bits, and they must adapt if they are to compete.

Meanwhile, as the technological toys and trappings revolutionize each new generation, there is no denying the slow pace of our biological clock. Clearly, I've inherited my dad's observant eye on society and its constantly fascinating behavior. Interestingly, too, my mom was a professional nurse, and I'm finding myself increasingly concerned about health issues. Specifically, did you know that 20 percent of young people have hearing loss? Moreover, that tragedy could have been avoided if only those kids . . . jeez, now I'm starting to sound like my mother. □

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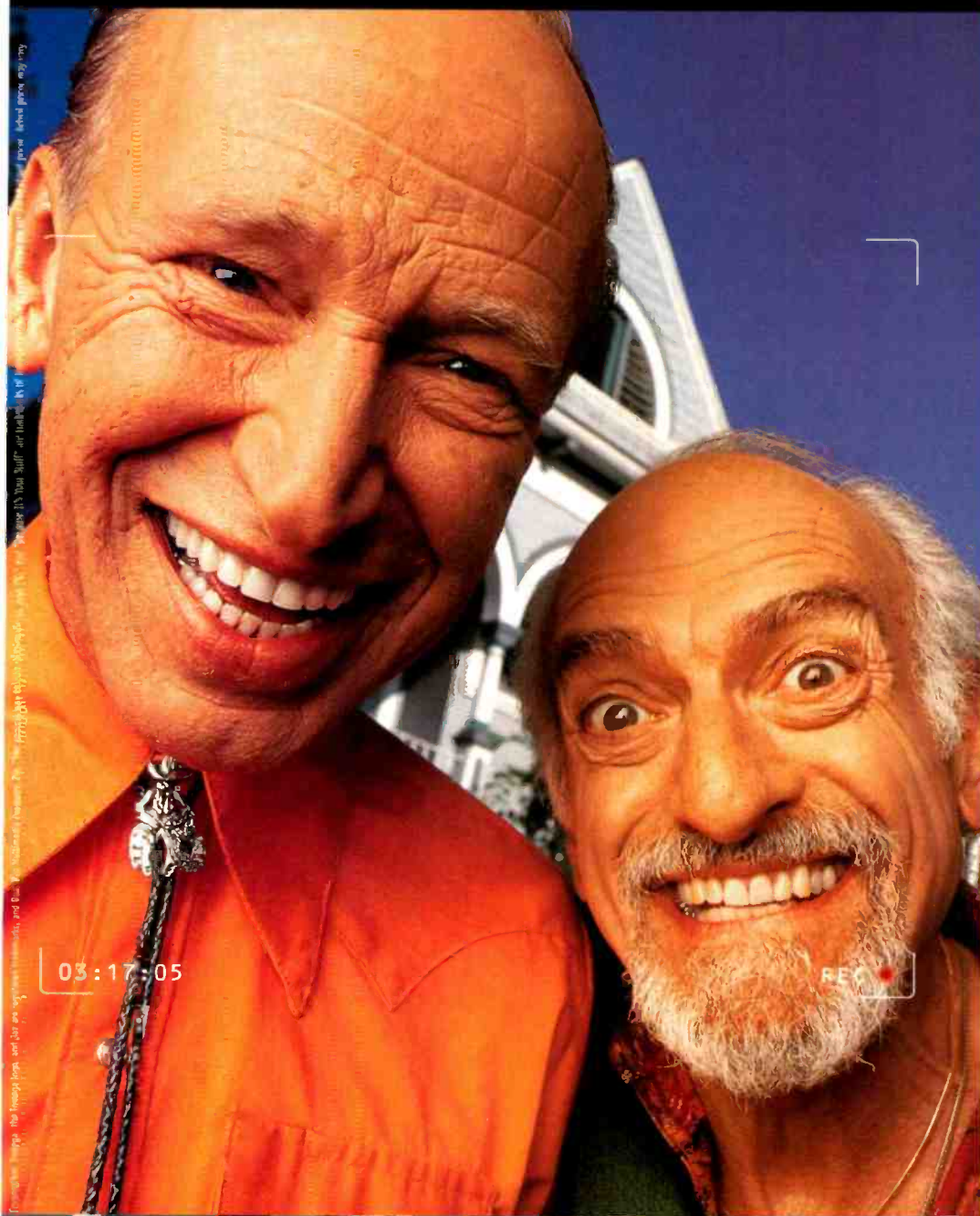


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MovieWorks™ 5.1 By Henry Kloss

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TECHNICAL TALK

JULIAN HIRSCH

Has Hi-Fi Reached Its Limits?

The pursuit of "perfect" sound reproduction in the home is presumably the aim of the high-fidelity industry and of the audiophile community that has grown up around it. Unfortunately, although we have made impressive advances toward attaining that goal, audio's Holy Grail continues to elude us.

Realistically, of course, perfection in any human endeavor is impossible. Nevertheless, the state of the art in music recording and reproduction is astonishingly good, and for all practical purposes it is now limited mostly by nontechnical factors such as economic constraints or the design and furnishing of our homes. If cost, space, and appearance were no object, we could come remarkably close to perfection with current technology.

In view of the practical limitations on the performance of affordable home audio systems, it might appear that our quest for "perfect" music reproduction was about to reach its end. To be sure, new audio components continue to make their appearance, frequently offering the happy combination of improved performance and lower prices. But there have been few, if any, fundamental advances in the art of music recording and reproduction since the development of the digital compact disc more than a decade ago. That's not to say nothing is happening. To the contrary, the recording industry is working with audio-equipment makers to come up with a new multichannel format known as DVD Audio, which could lead to a wave of new optical-disc-based players in the next couple of years. We'll have to wait and see how that develops.

Meanwhile, you don't need a fundamental technological breakthrough to make a significant improvement in an existing product or system. It is often more logical to seek out its most serious weaknesses and concentrate on correcting them rather than investing time and energy on developing additional features that leave the weaknesses still in place. In the case of audio, that means improving the speakers, which remain the ultimate weak links in the audio chain.

The question is, where do we go from here? As every reader of STEREO REVIEW knows, the emphasis of the con-

sumer-electronics industry has shifted to home theater, which involves recreating the movie experience at home. Of course, these same multichannel systems can be used to enjoy music as well.

However, when it comes to movies, in many ways the video requirements are easier to satisfy and more attainable than the audio aspects. Regardless of the qualities and content of the picture, the viewer always *knows* that he is seeing a two-dimensional display. No one could believe that he is actually *experiencing* the depicted actions even in special circumstances, such as a 3-D or Omni-Max film.

In contrast, we are often given the impression that an audio-only program *can* be reproduced with "concert-hall realism" under certain circumstances. Although it is possible under ideal circumstances to come amazingly close to achieving that

You don't need a technological breakthrough to make a major improvement in an existing product or system.

effect, even this is more likely to mimic a nonexistent hypothetical concert hall than *the* hall in which the recording was made (if, indeed, it was not made in a recording studio). Fortunately, for both consumers and the hi-fi industry, *perfect* simulation of a live musical performance is not really a "must," and we are usually satisfied to experience a *believable* simulation in playing back many of today's recordings.

Reproducing movie soundtracks presents a somewhat different problem. In most cases, the two-dimensional screen display is dominant, accompanied by dialogue and environmental sounds that are easily reproduced in the home without affecting the understanding, believability, or emotional impact of the viewing experience. Surround sound, used with discretion, enhances the viewer's experience at least to the degree that two-channel stereo music reproduction surpasses mono.

Sadly, though, there is a growing tendency for moviemakers to use bizarrely excessive or exaggerated video and audio effects, presumably to enhance the emotional qualities of the viewer's experience. When effects are laid on with a heavy hand, the result is analogous to the "ping-pong" effects that helped sink the hi-fi industry's ill-fated quadrasonic-sound venture in the 1970s. Judging by what I have seen, heard, and felt in some recent films, it is not too difficult to understand why some recent A/V receivers are so large and heavy. It takes a lot of power to reproduce those rumbles and other special effects.

I can't help wondering about the long-term effects of this "video revolution." As I've said many times in the recent past, ergonomic (human-engineering) considerations in some of the recent deluxe A/V receivers have been conspicuous by their absence, as evidenced by arrays of tiny black buttons assigned to arcane functions and often identified, on a black panel, merely with cryptic two- or three-letter acronyms.

The operating versatility and features of these technological wonders are as impressive as their bulk, weight, and price tags. But, when I think of the many people I know who have not yet managed to program their VCRs, and quite possibly never bothered to read (let alone understand) their relatively intelligible instruction booklets, I wonder how they would cope with the seventy or so pages of instructions that come with some full-bore A/V receivers.

While I am still in a critical mood, let me also note that the tuner sections of these deluxe receivers, both AM and FM, typically resemble what I'd expect to find in a department store "hi-fi" system, not a serious audio component. Based on what I have measured from many current receivers, I would guess that the FM tuner sections of most good receivers of the 1960s would outperform those of today's more expensive A/V models. Perhaps this reflects the current state of music programming on radio, or maybe "cheaping out" on the tuner is simply an easy way to cut manufacturing costs.

On the other hand, the overall audio performance of today's A/V receivers is just short of awesome, especially when driving a full surround-sound complement of speakers. In fact, tuner sections and ergonomics aside, the overall improvement in receiver quality in recent years parallels the advances in the performance and value of speakers, amplifiers, and CD players.

Summing up, it appears to me that our mutual hobby is alive and well, albeit not without some evolutionary growing pains. Undoubtedly it will continue to advance, and the consumer will be the beneficiary. Stay tuned! □

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JOCK P. LEUNG

Sony DVP-S3000 DVD Player and SDP-E800 Digital Surround Processor

DAVID RANADA • TECHNICAL EDITOR

Ho hum, yet another fine Sony DVD player. While the excellent video and ergonomic performance of the DVP-S3000 would normally send me into paroxysms of praise, the real story here is the SDP-E800 Digital Surround Processor, to give it Sony's official designation. It is one of the most versatile Dolby Digital (DD) processors we've seen.

First, however, the DVD player. The DVP-S3000 is a stripped-down version of Sony's first DVD player, the top-of-the-line DVP-S7000 (reviewed here in May's "First Look at DVD"). The most significant feature omitted from the new player is the earlier model's component-video outputs: the DVP-S3000 has only the now standard DVD-player complement of one S-video output and one composite-video output. There are also coaxial and optical digital audio outputs; both carry a CD's stereo audio signal as well as a DVD's encoded Dolby Digital signal, which must be fed to an outboard processor like the SDP-E800 or an A/V

receiver (or other component) with a built-in decoder.

Retained are the older model's unusually complete disc-navigation features (still-stepping, two slow-motion speeds, and three fast-scan speeds, all in forward and reverse), 10-bit video digital-to-analog (D/A) converters, a dual optical pickup that enables playback of CD-R recordable CDs as well as normal CDs and DVDs, and its nifty on-screen video bit-rate meter. The DVP-S3000 even adds a feature: a menu default that makes the player deliver a DVD's multichannel Dolby Digital data (if any) regardless of the

disc's own encoded default audio playback mode (some discs default to two-channel Dolby Surround outputs).

Just as important, the new player has retained all of the video and audio performance of its predecessor. In our measurements and listening/viewing tests, the DVP-S3000's combined DVD video and CD audio performance was unsurpassed by any other DVD player we have tested and equaled only by Sony's DVP-S7000. Add to that the well-behaved disc-navigation capabilities, still unmatched by any other player, and the DVP-S3000 looks (and sounds) like a winner.

Now for the SDP-E800 processor, which comes equipped with almost enough facilities sufficient to qualify it as a full-fledged A/V preamplifier, which is how I used it. It has four A/V input connections, one for analog audio and three for digital audio. While there is a composite-video, but no S-video, jack for each input, the audio connections vary. The Analog input (described as for a "VCR, etc.") gets a stereo pair of standard RCA jacks. The Digital 1 input, which is intended for a DVD or laserdisc player, receives data through either an optical or a coaxial connection. The SDP-E800 has a built-in RF demodulator, so Digital 1 also has an RCA jack that accepts the AC-3 RF output of a suitably equipped laserdisc player. You can select among Digital 1 sources, making it possible to connect more than one digital audio component to its inputs.

Digital 2, which is recommended

DIMENSIONS: DVP-S3000, 17 inches wide, 4¾ inches high, 15¾ inches deep; SDP-E800, 17 inches wide, 3¾ inches high, 14 inches deep

PRICE: DVP-S3000, \$599; SDP-E800, \$399

WEIGHT: DVP-S3000, 13½ pounds; SDP-E800, 14¼ pounds

MANUFACTURER: Sony Electronics, Dept. SR, 1 Sony Dr., Park Ridge, NJ 07656; telephone, 800-432-8005

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Finally, our engineers translate this

understanding of sound field behavior

into unique, sophisticated new signal-processing devices. Using Yamaha's extensive semi-

conductor design and manufacturing capabilities.

Just how much they've accomplished you'll hear in the new Yamaha RX-V2092. The first A/V receiver ever offered with on-board Dolby Digital AC-3 decoding as well as proprietary Yamaha 7-channel Tri-Field Cinema DSP.

Dolby Digital gives you 5.1



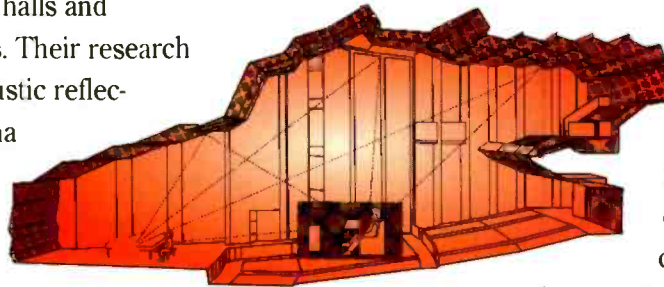
discrete channels of surround sound, positioned precisely as the director intended.

While our 7-channel Tri-Field Cinema DSP gives you the keys to the theater



by adding a whole new dimension of realism.

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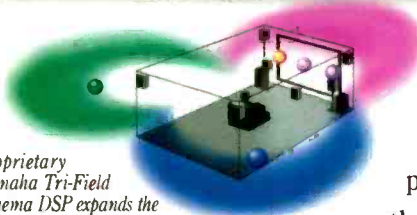
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for a DVD player or a satellite-TV tuner, has both a coaxial and an optical digital connector. And Digital 3, intended for connection to a CD player or a digital recorder (DAT or MD), has one optical input and one optical output. All three digital inputs will accept a Dolby Digital bitstream; the processor automatically recognizes DD signals and activates decoding. The Digital 3 output will feed stereo digital



LOOK P. LEUNG

(not Dolby Digital) data received from the Digital 1 or Digital 2 inputs to a digital recorder. The SDP-E800's other outputs are comparatively simple: one composite-video output and the standard six line-level, RCA-jack, surround-sound outputs to an amplifier (front left, right, and center; surround left and right; and subwoofer).

The first of the SDP-E800's operational felicities is that its front-panel controls are almost as complete as its remote-control facilities. Aside from controlling the volume and selecting the input source, from the front panel you can also select speaker-size settings, turn the subwoofer output on and off, match speaker volumes (turning on the test tone requires the remote), and adjust a built-in multichannel equalizer (there are separate bass and treble controls for the front left/right, center, and surround speakers, each control with a variable turnover frequency). From the front panel you can also introduce distance-compensating delays to the center-channel (0 to 5 milliseconds, or ms, in 1-ms inter-

vals) and surround outputs (0 to 15 ms in 5-ms steps), turn off the front-panel display, and select among the SDP-E800's multitude of surround processing modes as well as fine tune each mode's sonic characteristics.

To this comprehensive array of controls and features the remote adds separate buttons to adjust the left/right balance separately for the front and surround speakers; to control the levels of the center, surround, and subwoofer channels; to mute the processor's output or turn off its display; and to raise or lower the amount of digital ambience processing added for surround-sound playback.

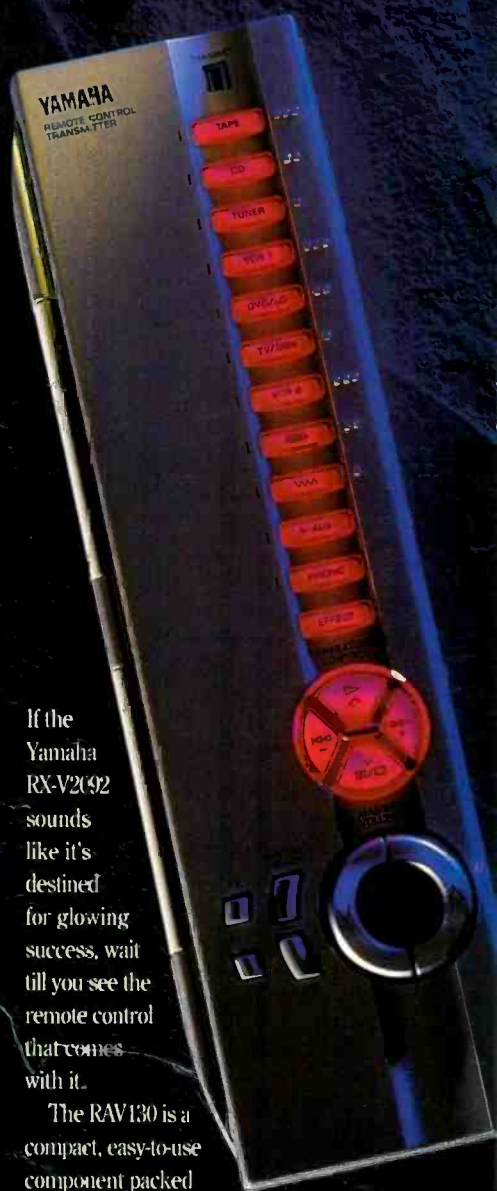
It's the ambience processing that really caught my fancy. Beyond full Dolby Digital decoding and, for older soundtracks, digital Dolby Pro Logic decoding, the SDP-E800 has a host of enhancement modes. Although Sony divides them up into six "genres" (Dolby, Movie, 3D, Music, Sports, and Games), it will repay a user's effort to experiment with "multicultural" ambience effects.

The Dolby genre comprises Dolby Pro Logic and Dolby Digital decoding, which are automatically selected according to the type of input signal received. To such basic decoding (the Normal mode) you can add some simple phase-shifting between the surround channels to produce the Enhanced mode. This subtly reduces the mono-ness of Dolby Pro Logic's surround channels (similar to THX decorrelation but not as effective). The Dolby Digital mode sounded every bit as spectacular as always.

The Game genre has only one mode, which is designed to "obtain maximum impact from video game software," according to the manual. The Arena mode of the Sports genre, reproducing "the feeling of a large concert arena," is said to be "great for rock and roll," while the Stadium mode provides the ambience of "a large open-air stadium" and is said to be "great for electric sounds." (Huh? Thunderclaps? Transformer explosions?) I found both Sports modes excessively echoey.

Not so with most of the Movie, 3D,

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and Music genres, which consist of eight, four, and ten modes, respectively. The Movie modes add ambience processing to Dolby Digital or Dolby Pro Logic decoding, again depending on the source format (stereo music receives Dolby Pro Logic steering).

Within the Movie genre the most interesting modes are those reproducing the ambience characteristics of actual Sony Pictures production studios. Respectively, the Cinema Studio A, B, and C modes give you the Cary Grant Theater, the Kim Novak Theater, and the Sony Pictures scoring stage, all in the Sony Pictures lot in Hollywood (actually, Culver City). There are also a Night Theater mode (for listening at lower levels), Mono Movie (producing a theaterlike environment from mono soundtracks), and generic Small, Medium, and Large Theater modes.

The Music genre's modes include small and large rectangular concert halls, small and large opera houses, small and large jazz clubs, a church, Live House (a rock-and-roll club), Acoustic (stereo with only the equalizer tone controls activated), and the ever-popular Karaoke (which removes recorded vocals for singing along).

Finally, the most interesting genre, 3D, and its four modes; these are not, strictly speaking, ambience modes but virtual-reality processing modes that make use of HRTFs (head-related transfer functions) in acoustical cross-talk-cancellation schemes driven by decoded Pro Logic or Dolby Digital signals. Virtual Enhanced A and B are both claimed to "create virtual rear speakers from the sound of the front speakers *without using actual rear speakers*" (emphasis added). Each creates a different array of virtual surround speakers. The Virtual Rear Shift and Virtual Multi Rear modes use actual surround speakers to "shift the sound of rear speakers away from the actual speaker position" and to "create an array of virtual rear speakers from a single pair of actual rear speakers."

With non-Dolby Digital material, both Virtual Enhanced modes seemed completely ineffectual. With 5.1-channel Dolby Digital soundtracks, on the other hand, the virtual surround speakers "appeared," seemingly out of nowhere, at the approximate locations diagrammed in the manual — and they were even elevated above ear level! Virtual Enhanced A was even more spectacular than Virtual Enhanced B, but neither mode worked at all if I moved more than a couple of inches

off the center line between the front left/right speakers. (All HRTF processes require nearly perfect acoustical symmetry in the sonic paths from the speakers to the ears.) In any case, if you don't have surround speakers yet, the Virtual Enhanced modes provide a useful stopgap, especially with Dolby Digital material (you should still use a center-channel speaker).

Virtual Rear Shift and Virtual Multi Rear were even more finicky in terms of listener position. I found that their effectiveness increased dramatically with increasing directionality in the surround speakers: conventional front-radiating speakers produced a more pronounced effect than either bipole or dipole surrounds (room reflections dilute HRTF effects). The most vivid results came when I used rear-placed front-radiating surround speakers in the Virtual Multi Rear mode. Least effective was Virtual Rear Shift mode used with side-placed surrounds. Again, the results were best with DD material and, apart from a typical HRTF timbre shift, minimal with anything else.

If you do have a full home-theater speaker system, you will probably be pleased with the processor's Music and Movie modes. Their ability to enhance both soundtracks and music ranged from good to superb in our tests, even at their default settings.

Do experiment with multicultural processing — you might get surprisingly fine results. For example, Cinema Studio A, the Cary Grant Theater, was the best processing mode I have ever used for enhancing stereo opera recordings. Cinema Studio B was not far behind, and these along with many of the other Movie modes were quite effective in adding spaciousness to pop recordings without producing an echoey distancing of vocals. That's because none of the Movie modes adds ambience processing to center-located dialogue or musical vocals, which benefits operas as it promotes intelligibility of soundtrack dialogue. Keep in mind, however, that using any of the Movie modes to enhance music will place continual strenuous demands on a center speaker that could adversely affect its sound quality.

With stereo material the Music modes do not put anything into the center speaker; even vocals receive ambience processing. So they were less effective in enhancing pop music than classical instrumentals, but they were excellent at the latter. The concert-hall settings produced a very life-

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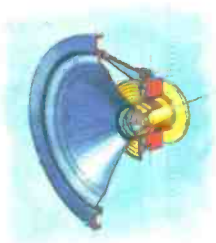
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like spread of reverberation around the listening room (I mostly used side-placed dipole surround speakers).

"Couldn't you like me the way I am?" Kim Novak asked in *Vertigo*. Well, there is a fly in the ointment: the SDP-E800 can be noisy. At volume settings (10 to 12 o'clock) that produced lifelike levels with symphonic classical music from power amplifiers and speakers of typical sensitivity, the background hiss level ranged from distinctly noticeable to downright annoying, particularly from the surround channels. On the precious few soundtracks with truly wide dynamic range (as opposed to those that merely range from moderately loud to deafening), the added surround-channel noise of the Movie modes was just as irritating. The processor never even achieved a barely acceptable noise level of -70 dB in our standardized tests in any mode or channel. I've remarked on the noisiness of Sony's surround processing before, and it's disappointing to encounter it again. Even at the SDP-

E800's comparatively low price, there's no need for a processor employing a 24-bit DSP chip to be this noisy. Again, Kim Novak in *Vertigo*: "It shouldn't have happened this way."

Still, the SDP-E800 is one of the best stand-alone Dolby Digital decoders out there, and its price is substantially below what you would pay for similar features in other processors (less than *one-tenth* the price of the much quieter and even more versatile Lexicon DC-1, the best of the breed). Fortunately for the SDP-E800, most pop music and soundtracks don't have nearly the dynamic range of, say, Stravinsky's *Rite of Spring* and thus won't require such high volume settings. And even with critical classical material I was often able to hear through the noise and enjoy the ambience processing. In fact, ever since the SDP-E800 arrived I've been pouring through movie discs and CDs exploring what the processor can do. As Cary Grant put it in *Bringing Up Baby*, "There haven't been any quiet moments." □

MEASUREMENTS

DVP-S3000 DVD VIDEO PERFORMANCE

Test patterns from Sony test/demo DVD.

SETUP LEVEL	7.5 IRE*
100%-WHITE-LEVEL ERROR	-3 IRE*
DIFFERENTIAL PHASE	<2°
DIFFERENTIAL GAIN	<2%
CHROMINANCE NONLINEAR PHASE	<1°
CHROMINANCE NONLINEAR GAIN	<1%
HORIZONTAL LUMINANCE FREQUENCY RESPONSE	
at 4 MHz	-0.53 dB
at 5 MHz	-1.93 dB
at 6 MHz	-3.87 dB

EQUIVALENT ON-SCREEN RESOLUTION

480 lines

* An IRE is a standardized unit of contrast

DVP-S3000 CD AUDIO PERFORMANCE

MAXIMUM OUTPUT	1.9 volts
FREQUENCY RESPONSE (20 Hz to 20 kHz)	
de-emphasis off	+0, -0.15 dB
de-emphasis on	+0, -0.14 dB
NOISE LEVEL (A-wtd)	
normal (de-emphasis off)	-94.9 dB
de-emphasis on	-97.5 dB
EXCESS NOISE (without/with signal)	
16-bit (EN16)	+0.75/+0.65 dB
quasi-20-bit (EN20)	+12.2/+11.9 dB
DISTORTION (THD+N, 1 kHz)	
at 0 dBFS**	0.0024%
at -20 dBFS**	0.023%

LINEARITY ERROR

at -90 dBFS** +0.15 dB

DEFECT TRACKING

(Pierre Verany test disc) 1,500 µm

SDP-E800 PROCESSOR DOLBY DIGITAL (AC-3) PERFORMANCE

Test signals from Dolby Labs test DVD. Volume at level that produced the reference level of 200 millivolts from the left front channel with a -20-dBFS** input signal (approx. 2 o'clock).

FREQUENCY RESPONSE (all channels, all

"large" main speakers)
20 Hz to 20 kHz +0, -0.67 to -0.72 dB

NOISE (A-wtd, re reference output level)
worst case (surrounds) -67.8 dB

EXCESS NOISE (typical results, with signal)
16-bit (EN16) +8.25 dB
18-bit (EN18) +20.3 dB

DISTORTION
(worst case, 1 kHz, 0 dBFS**) 0.1%

HIGH-PASS FILTER RESPONSE
("small" main speakers)
6-dB/octave rolloff below -3-dB point at 74 Hz

SUBWOOFER-OUTPUT FREQUENCY RESPONSE
16-dB/octave rolloff above -3-dB point at 79 Hz

MAXIMUM SUBWOOFER OUTPUT
(all "small" main speakers) 9.5 volts

SUBWOOFER DISTORTION AT MAXIMUM OUTPUT 23.2%

CHANNEL SEPARATION
(at 1 kHz, 0 dBFS**) >60 dB

** decibels referred to digital full-scale

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TOTAL _____

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High Performance Review

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“ All in all, this is a lot of speaker for \$1,500 a pair – which is precisely the point of CSW's factory-direct strategy...As soon as I fired the Towers up, it was evident that they threw a big image. The Towers' soundstage was noticeably deep and solid on most material.” *Audio*

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PHOTOS BY DAVE SLIGLE

Definitive Technology ProCinema 100.3 Sub/Sat Speaker System

JULIAN HIRSCH • HIRSCH-HOUCK LABORATORIES

The Definitive Technology ProCinema speaker system was designed as an affordable means of enjoying movies at home as well as providing high-quality music reproduction. The available system components are the ProMonitor 100 satellite speakers, ProCenter 100 center-channel speaker, and ProSub 100 powered subwoofer. They were designed as a compatible family whose driver complements allow a diversity of system configurations.

My report focuses on a subwoofer/satellite system comprising a pair of ProMonitor 100 speakers and the ProSub 100, which can be upgraded for surround-sound playback by adding a ProCenter 100 (\$199) and two more ProMonitor 100s for the rear surround channels (see facing page). It is also possible to use a pair of ProSub 100 subwoofers if preferred.

The ProMonitor 100 is a small two-way speaker with a nominal frequency-response rating of 50 Hz to 30 kHz. Its enclosure (available in black or white) is molded from a dense synthetic material called PolyStone that

is acoustically "dead." The cabinet, which is structurally strong and rigid, is molded in a shape that the manufacturer calls NROC, for Non-Resonance Optimization Curve. Its constantly varying curvature (there are no parallel surfaces in the enclosure) is said to minimize internal-resonance modes of the enclosed volume.

The drivers are a 5¼-inch woofer with a rigid cast-alloy basket and a 1-inch aluminum-dome tweeter with a silk surround. These are the same basic drivers used in the company's flagship BP2000 system. The curved plas-

DIMENSIONS: ProMonitor 100: 11 inches high, 6¼ inches wide, 6 inches deep
ProSub 100: 14½ inches high, 11¼ inches wide, 17 inches deep

WEIGHT: ProMonitor 100, 6½ pounds;
ProSub 100, 29 pounds

FINISH: white or black

PRICE: ProMonitor 100, \$175 each; ProSub 100, \$449; three-piece system, \$799

MANUFACTURER: Definitive Technology, Dept. SR, 11 f05 Valley Heights Dr., Owings Mills, MD 21117; telephone, 410-363-7148

tic grille is easily removed to reveal the drivers.

The ProMonitors have a highly versatile mounting system. Each speaker has an integral pivoting base on a ball joint, which can also be unscrewed and mounted on the rear of the enclosure to install the speaker on a wall. The ball joint enables each speaker to be positioned to suit the needs of the listening environment. And, finally, the rear of the speaker cabinet has a simple keyhole mount that can be used for fixed wall-mounting with a screw.

The ProSub 100 is usable not only with the ProMonitor 100s but also with a variety of other small speakers that are capable of playing down to 100 Hz or so. Its cabinet is available in either black or white. Like most subwoofers, the ProSub 100 should be placed on the floor, preferably near a corner or wall.

The module contains a 10-inch long-throw driver driven by an integral 125-watt amplifier. All inputs and controls are on the rear panel of the enclosure, together with a full-width rectangular vent. There are knobs to adjust amplifier gain (level) and the low-pass crossover frequency, which can vary between 40 and 150 Hz, with a slope of 24 dB per octave.

There are also RCA-jack input connections for line-level signals from a preamplifier as well as gold-plated binding-post input terminals for driving the subwoofer from an amplifier's speaker-level outputs. The front (speaker opening) of the subwoofer is covered by a removable snap-on grille.

The instructions for setting up the ProCinema components are explicit and detailed. Depending on the complexity of the installation, it can be a simple or involved process (this, of course, applies to any home-entertainment system installation).

In our test/listening setup, all three ProCinema speakers were driven from our system amplifier's speaker-level outputs. We mounted the satellites on stands, about 8 feet apart, that placed their tweeters 43 inches above the floor. For listening tests, we placed the ProSub 100 on the floor near the left speaker, about a foot from the wall behind it. We adjusted its level and crossover controls by ear (the recommended method and the only practical one) to suit the program material and our listening preferences.

We measured the satellites' response (without the subwoofer) the same as we do for all speakers we test. Later

PROCINEMA 100.6 HOME THEATER SPEAKER SYSTEM

PICKING UP WHERE Julian Hirsch left off, I auditioned the home-theater version of Definitive Technology's ProCinema 100.3 system, which adds to that three-piece lineup the ProCenter 100 center-channel speaker and a second pair of ProMonitor 100 satellites. Dubbed the ProCinema 100.6, the six-piece system lists for \$1,350.

The ProCenter 100 is a magnetically shielded two-way design that uses the same 1-inch aluminum-dome tweeter found in the ProMonitor 100 satellite. But instead of a lone 5/4-inch woofer, the ProCenter has two 4 1/2-inch woofers. The ProCenter's rated sensitivity is also 3 dB higher than that of the ProMonitor 100. Cabinet construction is the same. In a nice touch I'd like to see more often, the underside of the ProCenter 100 has an adjustable-tilt leg so that you can aim the speaker down toward the listening position if necessary.

Definitive Technology describes the ProCenter 100 as "perfectly timbre-matched" to the ProMonitor 100 satellites. Timbre-matching improves the naturalness of a multispeaker system by insuring that the movement of sounds across the front three speakers is seamless and believable, and also that the system retains the same sonic signature when you switch between two-

channel music programs and movie/TV surround sound.

I set up the ProCinema 100.6 in my living room, placing the ProCenter 100 atop a Pioneer big-screen TV and the ProMonitor 100s on speaker stands, 24 inches tall for the front pair and 40 inches tall for the rear surround pair. I placed the ProSub 100 just to the right of the right front speaker, about a foot out from the front wall (not in a corner). Theta's Casablanca digital surround preamp and Data III CD/laserdisc transport served as the front end, along with a Toshiba SD-3006 DVD player, while a Krell KAV-500 500-watt five-channel power amp drove the center and satellite speakers.

Overall, the ProCinema 100.6 speaker system provided competent performance with laserdiscs and DVD movies. The ProSub 100 subwoofer struck a balance between musical tightness and cinema impact, and the integration between the ProSub 100 and the ProMonitor 100 satellites up front did not suffer from any significant holes or cancellations. Deep-bass performance was also very good, and the dynamics were impressive for a system in this price range. The use of identical, direct-radiating speakers for the surround channels was an advantage during Dolby Digital soundtracks,

which can deliver discrete, directional sound effects in those channels.

Although I compensated for the ProCenter 100's higher sensitivity when I calibrated all of the speakers' levels to within 0.2 dB

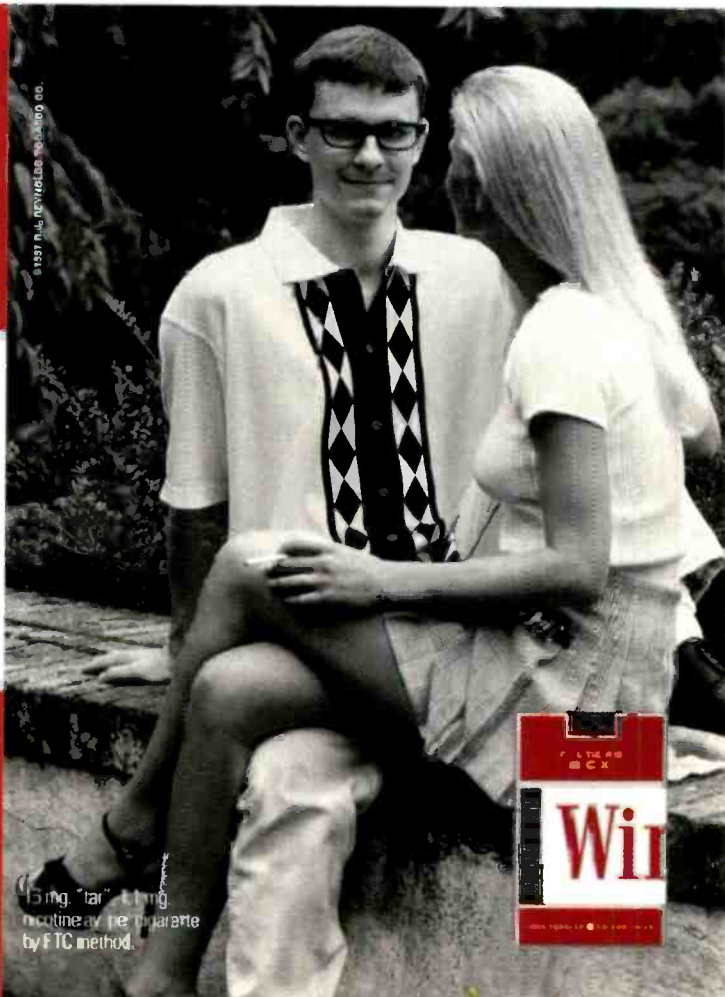


of each other, I found that it had a brighter, more forward sound than the satellites. To get the best overall performance from the system, I replaced the ProCenter speaker with a fifth ProMonitor 100 satellite. Once I did so, both pink-noise test signals and Dolby Surround soundtracks were more accurately reproduced. —Corey Greenberg

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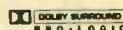


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TEST REPORTS

we tested the subwoofer frequency response alone using two microphones, one close to the driver cone and the other at the rear port, summing their outputs in proportion to their respective areas.

The averaged room response of the two satellites was flat within ± 4 dB from 120 Hz to 15 kHz. Over most of that range, from 400 Hz to 10 kHz, the output variation was a mere ± 1 dB. The quasi-anechoic MLS frequency response at 2 meters was an excellent ± 5 dB from 300 Hz to 20 kHz.

The tweeter's horizontal dispersion was exceptionally good for a 1-inch dome radiator. At angles of ± 45 degrees off the forward axis of the speaker, the output sloped off (relative to the frontal radiation) by only about 5 dB from 5 kHz to 15 kHz, continuing downward by only another 4 dB from 15 to 20 kHz.

The ProSub 100 subwoofer's maximum output occurred at 70 Hz, falling off at 6 dB per octave from 70 to 35 Hz and more rapidly below that point. Since there is no fixed relationship between the subwoofer's frequency response and level relative to the main system response, it was impossible to

establish an overall frequency-response figure for the complete system (this applies to most sub/sat speaker systems). The relative system levels must be adjusted to suit the user's taste, and

The ProCinema 100.3 system's spatial imaging was excellent, and the subwoofer was visually and acoustically unobtrusive.

perhaps modified for different program material.

Both the ProMonitor 100 and the Pro-Sub 100 are magnetically shielded for use close to a TV or video monitor. Magnetometer measurements on the exterior surface of the speaker indicated a flux level typically under 0.5 gauss, an insignificant level.

The nominal impedance of the ProMonitor 100 is stated as being "compatible with 8-ohm outputs." In our measurements, it reached its minimum

of 3.6 ohms at 250 Hz, with maxima of 16.5 ohms at 100 Hz and 20.1 ohms at 19 kHz. The satellite's sensitivity is specified as 90 dB (our measurement was 89 dB). In view of its high sensitivity, the ProMonitor 100 should be very easy to drive with any properly functioning amplifier.

In listening tests, the ProMonitor 100/ProSub 100 trio acquitted itself admirably. As one might expect from the compactness of the satellites, the spatial imaging of the system was excellent, and the subwoofer was both visually and acoustically unobtrusive. The deep bass was effectively reproduced down to near 30 Hz (depending on the control setting). It is worth remembering that a full-featured subwoofer is not something you can simply put in a corner, connect to an amplifier or receiver, and walk away. In general, the crossover frequency and level must be set by trial and error to harmonize with the requirements of the listening environment, the other system components, and the program content. When these conditions are met, the ProCinema components deliver a caliber of sound that belies their modest size and price. □

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NAD Model 118 Digital Preamplifier

DAVID RANADA • TECHNICAL EDITOR

The task of testing NAD's Model 118 preamplifier sent me on a pleasant trip down memory lane. It reminded me of two classic products from the early days of my involvement with audio, the innovative and still impressive Apt/Holman preamplifier and the versatile dbx Model 117 compressor/expander, both long discontinued. While there are genealogical and numerical links between those classic models and the NAD Model 118, the new preamp is far more evolved technically than its ancestors.

For starters, it is digital: nearly all of its functions are performed by a Motorola DSP56004 digital signal processing chip operating in the digital domain, even when fed from analog sources. Each of its four rear-panel inputs (disc, tuner, video, and tape) is available in analog and digital form via a pair of RCA jacks for stereo analog signals and a coaxial digital input; unfortunately, there are no optical digital inputs. The analog and digital inputs for each source are separately selectable, giving the preamp an actual input capability of four analog and four digital sources.

To obtain a digital signal from an analog source, the analog signal first passes through an input attenuator that

is separately adjustable for each input. This prevents overloading of the Philips Bitstream analog-to-digital converters (ADCs) on peaks, which are accurately indicated by an LED above the volume knob. Then the signal is immediately converted to 48-kHz, 18-bit digital audio. Until the signal reaches the digital-to-analog converters (DACs) and emerges in analog form from the preamp's main analog output, a standard pair of RCA connectors, all audio processing is done through strictly digital computation.

For driving external DACs, there's also a digital output carrying the same signal that feeds the Model 118's internal DACs. The record outputs are available in either analog or digital form and thus allow analog recording of digital sources. Furthermore, they give you the ability to record the source either before or after processing.

DIMENSIONS: 17 $\frac{1}{8}$ inches wide, 3 $\frac{3}{4}$ inches high, 11 inches deep

WEIGHT: 17 $\frac{1}{2}$ pounds

PRICE: \$1,499

MANUFACTURER: NAD, distributed by Lenbrook America, Dept. SR, 1600 Providence Highway, Suite 286, Walpole, MA 02081; telephone, 508-660-8300

The NAD 118's family resemblance to those classic Apt and dbx components is clearest in its processing functions. There are six of them, each separately activated and adjusted: bass, midrange, and treble tone controls; infrasonic filter plus midrange and treble tone controls; FM (see below); Width (an Apt function); Width & Spread; and variable compression (similar to that provided by the dbx 117).

The tone controls are unconventional in their action: neither the bass nor the treble control has much effect on the midrange even at extreme settings. Believe the manual when it delimits the bass control's action to "contrabass, kettle drums, bass guitar, etc." and the treble control's to "cymbals, high-hats, and other percussion instruments." The midrange control operates like a graphic-equalizer control band centered at around 3 kHz. From this vantage point it can greatly influence the sound of "vocals, trumpets, violins, etc." Unlike analog tone controls, the Model 118's digital controls produce no phase shifts, and their actions are absolutely identical on both channels, preserving stereo imaging.

NAD's FM function is just as well thought out and even more interesting. When turned all the way down, the FM control will pass the input signal unaltered. As you turn it up, the signal becomes progressively more monophonic, which will reduce the hiss of stereo FM broadcasts, hence the name of the function. At the same time, however, simulated-stereo processing gradually comes into play, maintaining apparent separation for many types of music. When the FM knob is turned

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TEST REPORTS

all the way up, the reproduced signal is full mono "but spaciousness and spread [have] been regained thanks to the stereo simulation." The Model 118's simulated-stereo processing is a comb-filter system that splits the audio band into approximately one-third-octave intervals and sends alternate bands to the left and right channels.

The Width control acts as it did on the Apt preamp; adjusting the stereo separation to compensate for deficiencies in recordings. From its neutral, pure-stereo setting, turning it all the way down makes the signal increasingly monophonic. Turning it up will gradually increase the relative level of the difference between the two stereo channels to produce an increase of separation. All the way up, the signal is pure L - R, with the two channels out of phase. Width has no effect on mono signals.

Width & Spread combines the action of Width with a separate Spread control governing the same simulated-stereo process used in the FM function. Width acts as above, and Spread introduces a variable amount of simulated stereo processing into the preamp's output.

The last main DSP function is compression. Turning compression up will raise the relative volume level of soft passages by as much as 24 dB without changing that of the loudest passages.



"making the music much more enjoyable at low volume levels." The manual also mentions that recordings of compressed signals can be useful for playback in a car or in a portable cassette player.

Turning the compression control down from its neutral position will expand the signal's dynamic range, lowering the relative volume level of soft passages without changing that of loud passages, thus increasing the difference in level between loud and soft.

MEASUREMENTS

DIGITAL-INPUT PERFORMANCE

Measured at the main preamp output with the volume control set just below clipping with a full scale (0-dBFS) digital input signal (12 o'clock position). Except for tone-control and infrasonic-filter action, all measurements taken with DSP functions off. Dithered 16-bit input signals.

MAXIMUM OUTPUT LEVEL (0-dBFS input)
normal gain 0.286 volts
high gain 0.92 volts

LINEARITY ERROR
at -90 dBFS +0.05 dB

NOISE (re maximum output, A-wtd)
normal (de-emphasis off) -94.5 dB
de-emphasis on -96.9 dB

EXCESS NOISE (without/with signal)
16-bit (EN16) +0.85/+0.85 dB
20-bit (EN20) +12.6/+12.8 dB

DISTORTION (THD+N, 1 kHz)
at 0 dBFS 0.003%
at -20 dBFS 0.028%

FREQUENCY RESPONSE (20 Hz to 20 kHz)
normal (de-emphasis off) +0,-0.19 dB
de-emphasis on +0.04,-0.14 dB

TONE-CONTROL ACTION (max/min)

bass (at 50 Hz) +9.2,-5.9 dB
midrange (at 2.9 kHz) +6.6,-7.8 dB
treble (at 10 kHz) +10.7,-8.7

INFRASONIC-FILTER ACTION

12 dB/octave rolloff below -3-dB point at 24 Hz

ANALOG-INPUT PERFORMANCE

Measured from main preamp output with input attenuator at -5 dB (suitable for a typical home CD player). For all tests except input overload the volume was set to just below output clipping with a 2-volt input (approx. 1 o'clock position). All DSP functions off.

MAXIMUM OUTPUT LEVEL (2-volt input)
normal gain 0.3 volts
high gain 1 volt

INPUT-OVERLOAD LEVEL
(re 2-volt input) +2.6 dB

NOISE (re max output, A-wtd) -95.8 dB

DISTORTION

with 2-volt input 0.003%
with 0.2-volt input 0.026%

FREQUENCY RESPONSE

20 Hz to 20 kHz, +0,-0.35 dB

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TEST REPORTS

This can be useful for partially undoing the compression that is universal with radio broadcasts (which is how I mainly used my dbx Model 117).

The NAD preamp also provides other, less exotic DSP functions: balance, mono, and polarity inversion. An (analog) High-Gain button boosts the output volume level by 10 dB and should be engaged when playing at high volumes. It enables a greater range of fine control of the volume than the typical single range provided by other digital components. The Model 118 has neither a headphone output nor any AC convenience outlets.

Nearly all of the front-panel controls are duplicated on the remote, which even adds a few functions. The most important of these are the two types of system memory: the Input Memory Bank memorizes the DSP settings separately for each input, while the DSP Memory Bank separately stores preferred settings for each DSP function regardless of the selected input.

For the advanced user, the Model 118 has various esoteric options accessed by special front-panel button sequences. For example, you can change the default 48-kHz sampling rate for the analog inputs to 44.1 kHz. This is essential if you expect your processed output eventually to end up on a CD-R or MD. You can also change the level of distortion-eliminating dither on the digital-recorder output from its default 18-bit level to one suitable for recording on a 16-bit digital recorder. Finally, you can reset all the digital functions to neutral, which otherwise requires calling up each function individually and pushing the remote's Clear button.

As long as you avoid lighting the Peak (overload) indicator, you don't have to worry about the signal quality of the Model 118 — all of our lab tests produced superb results. Since in digital-input operation the NAD 118's internal DACs will substitute for the DACs in the digital source, our tests measured much of the preamp's performance as if it were a CD player. The excess-noise result with quasi-20-bit signals (EN20) was much better than on most CD players, while the EN16 figure of +0.85 dB has been surpassed by only a handful of digital sources. The A-weighted noise levels without de-emphasis were only 1.2 dB higher than perfect 16-bit performance. All the noise results indicate that this preamp will add negligible

noise to a digital input signal. Our other test results confirm that the Model 118's digital-to-analog performance is worthy of comparison with that of the best CD players.

The preamp's analog-to-digital performance was also excellent. Looked at from the digital-recorder output, it was superior to that of most of the digital recorders we have seen. The Model 118 can substitute for the ADC stages of a digital audio tape (or disc) recorder with no loss in quality, and quite possibly with a gain in quality, especially since the digital-recorder output contains noise-shaped dither that reduces the quantization noise in the crucial 2- to 5-kHz region by several decibels.

The measured performance only reinforces the sonic cleanliness we heard in listening tests. With the DSP functions switched out the preamp's output was as free of noise and distortion as a direct feed from a digital source — which, of course, is essentially what it was. With DSP in, the tone controls sounded just as the manual said they would, affecting only the specified sound ranges. The midrange control greatly changed the sonic character of violins, for example, while the treble control was more effective in taming vocal sibilance. Likewise, the other main DSP functions performed suitably for their intended uses.

But the NAD 118's DSP functions are far more versatile than even the extremely well-written and comprehensive manual would lead you to believe. The expansion mode of the compression function, for example, was fascinating to use not only on compressed broadcast signals but also on pop CDs, which are often very heavily compressed. The approximately 3-kHz placement of the midrange tone control makes it useful for undoing the slight dip in frequency response that speakers often have in this range, where many woofer-to-tweeter crossovers occur. I also experimented with using the FM function in conjunction with a Dolby Pro Logic decoder to produce pseudo-stereo surround channels, sort of like THX decorrelation, with very interesting results. And the Model 118 makes it easy to gauge these effects from your listening position using the remote's DSP in/out button.

I have only two complaints, both operational. First, the setting of any main DSP function (including volume

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TEST REPORTS

and balance) is displayed either by the position of the applicable front-panel knob *or* by the position of a horizontal line of LEDs running along the top of the display window. But turning a front-panel knob doesn't change the display, which itself won't light up unless adjustments are being made with the remote. As it says in the manual, there will be times when "the position of the corresponding [DSP] controls on the front panel will bear no relation to the actual setting chosen." On the remote NAD provides a button that changes all the DSP settings to those indicated by the positions of the knobs, but there is no control that moves the front-panel knobs to correspond to what the indicator lights show. In any case, the nature of the LED readout makes it less useful for determining settings than the knob positions, which are themselves indicated only by a small dot on each control.

That leads to my second ergonomic complaint. Since all the preamp's processing is digital and is accomplished in very small, exactly repeatable steps, without an equally precise readout of each function an accurate return to an earlier setting is virtually impossible. While numerical readouts would probably spoil the elegant appearance of the front panel, they would actually make the Model 118's DSP functions *much* easier to use.

Why am I concerned about such exactitude for functions that will primarily be adjusted by ear? Because the array of functions offered in the NAD 118 are supremely suited for processing sounds for recording, especially older material with less than "CD-quality" sound. When doing such post-production work, it is vital to be able to return to your previous settings, especially if you are doing any editing. And it is ironic that the best source for older or distressed program material suitable for improvement by the Model 118 is not easily accommodated — it has no phono input.

So if you need a stereo-only preamp that takes line-level analog and multiple digital signal sources and has a fascinating collection of useful signal-processing functions, your only choice is the one-of-a-kind NAD 118. Thank goodness that the thought put into its design — NAD's white paper describing the circuitry is a paragon of clarity and well-grounded reasoning about digital audio — has produced a component of such superb sonic performance and extraordinary versatility. □



DOCK P. LEUNG

Hsu Research TN1225HO Powered Subwoofer

TOM NOUSAINE • TN COMMUNICATIONS

Hsu Research has been selling high-quality subwoofers by direct mail for several years now. The TN1225HO is the company's latest model, and it differs from earlier Hsu subs in several important ways. First, although it uses a 12-inch driver, the enclosure is significantly smaller than in the company's previous 12-inch subwoofer. The new enclosure, while still cylindrical, now takes up a minuscule 0.81 square feet of floor area and consumes a mere 2.2 cubic feet of your living space. Also, the TN1225HO is designed for a low-frequency extension of 25 Hz.

Interestingly, the new model is available in three configurations. You can buy it powered by an outboard 250-watt amplifier with a fixed electronic crossover or by a 150-watt amplifier with a crossover adjustable from 40 to 180 Hz. If you already have an amplifier and crossover in your present system, you can buy the speaker section alone. The amplifier is not built into the subwoofer enclosure, as it usually is in a powered sub, so it can be placed at the listening position to help simplify system tuning.

The TN1225HO's enclosure is a thick cardboard tube 12¼ inches in diameter and 32 inches tall with the long-stroke driver mounted in the top. The enclosure has a 4½-inch-diameter vent some 20 inches long with large flares at either end. The bottom contains a pair of dual banana-jack input terminals. The enclosure is suspended 2 inches above the floor on three conical feet so that the driver cone faces upward and the port faces the floor. There is no speaker grille, which means that you cannot place anything on top of the subwoofer. The top can, however, be protected by an optional metal grille, available at Radio Shack for \$12.99.

Specifications include a frequency response of ±2 dB from 25 Hz to the crossover limit, power handling of 250 watts, impedance of 4 ohms, and sensitivity of 93 dB sound-pressure level (SPL) at 1 meter with a 2.83-volt input.

The 250-watt amplifier option has a fixed low-pass crossover with a 24-dB-per-octave slope. The crossover frequency is set with a plug-in module; the standard frequency is 91 Hz, but you can specify 28, 34, 43, 51, 62,

75, 109, 131, or 151 Hz. The amplifier accepts stereo line-level and speaker-level inputs and has a level control, a two-position phase control, a single speaker-level output, a crossover-defeat switch, a defeatable soft-clipping circuit, and a metal chassis that fits in standard rack spaces.

The 150-watt amplifier looks very much as if it has just been carved out of the back of an existing powered subwoofer. Mounted in a 10 x 8 x 5 1/4-inch particleboard box, it has a mono line-level input (both RCA and XLR jacks), a variable 40- to 180-Hz low-pass crossover with a 12-dB-per-octave slope, a continuously variable phase control, a nondefeatable passive soft-clipping circuit, dual banana-jack speaker-level outputs, and a detachable line cord. The inputs, all controls, and the heat sinks for the amplifier are mounted on one side of the enclosure. Its gray-painted finish is nice enough, but it makes no style statement and seems destined to be placed behind your equipment rack instead of in it.

So the sub is small. What else? Well, it kicks out major bass jams. As expected, it had somewhat less extension than previous Hsu Research models I've tested, going down to 27 Hz in the laboratory with a tight ± 2.5 -dB tolerance when driven by the 250-watt amplifier with its crossover bypassed. With the sub placed in the best corner of my large listening room (13 x 23 x 18 feet with large openings and adjacent spaces), its room response at the listening position 2 meters away was ± 2.6 dB from 30 to 82 Hz using the 91-Hz crossover. In a smaller room, I'd expect its response to extend down to 23 Hz.

Measured with a special tone-burst signal and a 10-percent distortion limit, the big amplifier produced a maximum output of 111 dB SPL at 62 Hz,

DIMENSIONS: subwoofer, 12 inches in diameter, 32 inches long; outboard 250-watt amplifier/crossover, 17 x 4 x 12 inches; 150-watt amp/crossover, 8 x 10 x 7 inches

WEIGHT: subwoofer, 22 pounds; 250-watt amp, 17 pounds; 150-watt amp, 13 pounds

FINISH: subwoofer, black knit cloth; 250-watt amp, black metal; 150-watt amp, gray-painted particleboard cabinet

PRICE: subwoofer alone, \$350; with 250-watt amp, \$800; with 150-watt amp, \$575

MANUFACTURER: Hsu Research, Dept. SR, 14946 Shoemaker Ave., Unit L, Santa Fe Springs, CA 90670; telephone, 800-554-0150

an average of 107 dB over the power-hungry range from 25 to 62 Hz, and 102 dB from 16 to 80 Hz. The 150-watt amplifier cranked out a maximum SPL of 107 dB at 62 Hz and 103 and 99 dB, respectively, over the 25- to 62-Hz and 16- to 80-Hz ranges.

When I tried driving the subwoofer with a 250-watt Bryston 4B amplifier, it delivered 4 dB more SPL at 32 Hz, but over our bass ranges of interest the overall output was 1 dB lower than with the 250-watt Hsu amp. That's because the Hsu amplifiers contain a bass boost of 4 dB at 27 Hz, which flattens and extends the response of the ported enclosure (tuned to 24 Hz) and adds about 9 dB of clean bass at 25 Hz. They also contain 18-dB-per-octave high-pass filters that keep infrasonic signals from overloading the speaker.

The behavior of the Hsu electronics was excellent. The crossover in the 250-watt amplifier was 3 dB down at 82 Hz, with the specified 24-dB-per-octave slope. The 150-watt amp's crossover had a 56-Hz turnover point at the lower end of its rotation (where the knob reads 40 Hz) and 182 Hz at full clockwise (where the knob says 180 Hz).

Using program material, specifically the car-bomb explosion scene in *Clear & Present Danger*, I was able to blast out 114 dB SPL at the listening position using a Dolby-calibrated 0-dB setting and a fully tuned and tweaked full-range surround system. Forgetting distortion control (and good taste), I was able to whack out 114 dB on Bass Erotica's *Bass Ecstasy* CD, 115 dB on "Jurassic Lunch" from Telarc's *The Great Fantasy and Adventure Album*, and 108 dB on the cannons in Telarc's recording of the *1812 Overture*. The cannons were, of course, limited because there was a preponderance of infrasonic information being rejected by the infrasonic filter. I was unable to get the speaker's cone to bottom out at any time, but I was able to generate substantial audible suspension distress as I approached the speaker's limits.

So there you have it: performance and value in a big-league winner from Hsu Research. The TN1225HO plays louder (over 110 dB SPL with program material) and goes deeper (a true 25-Hz extension) than any of the competitive subs I've tested in its price or size class. The performance will thrill all but the most ardent pipe-organ fanatics, who will miss the 16-Hz fundamentals. □

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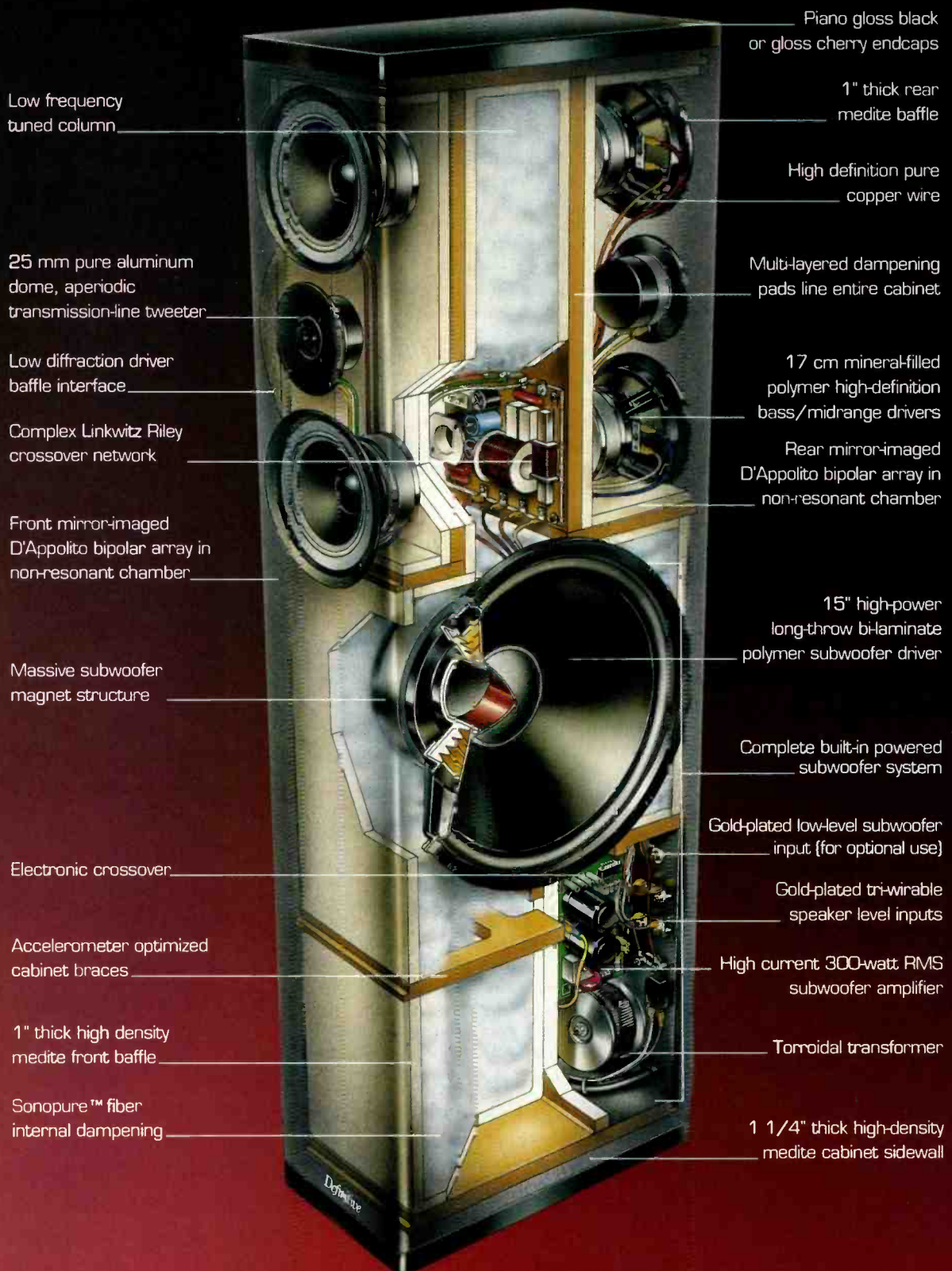
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DOCK P. LEUNG

Millennium Model 2.4.6 DTS Decoder

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If you thought you had your home-theater bases covered with Dolby Digital, Pro Logic, and DSP surround modes, you may want to think again. DTS encoding from Digital Theater Systems might be new to home audio, but this discrete 5.1-channel digital surround-sound technology is the predominant system in commercial cinemas. DTS enjoys a roughly two-to-one lead over Dolby Stereo Digital, the theatrical version of Dolby Digital, in the number of "screens" supported. DTS's six digital soundtracks — front left, center, right, left and right surround, and low-frequency effects (LFE)/subwoofer, the same breakdown as Dolby Digital — reside on CD-ROM (two discs per film, typically), which are played by CD-ROM drives much like the one in your computer. An optical SMPTE timecode striped along the film print synchronizes the disc and film.

Now Digital Theater Systems is introducing its format to home cinema via a small but growing catalog of laserdiscs and DTS-only compact discs, both carrying a "domesticated" version that, data-wise, is identical to what is decoded in theaters. DTS is similar in concept to Dolby Digital in that it uses data-reduction techniques to decrease the amount of data required to produce six channels of digital audio. However, DTS enjoys far greater bit density. The system exploits the same carrier as conventional CDs, about 1.5 megabits per second — nearly four times that of a Dolby Digital laserdisc's standard of 384 kilobits per second.

The greater bit density has two profound implications. First, DTS's larger "data pool" is seen by some as supporting the system's claims of sonic superiority over Dolby Digital. (DTS uses 20-bit encoding and can preserve this resolution in playback, which could certainly be a factor.) But the second implication is that its CD-equivalent bit rate requires DTS to displace the conventional, CD-format PCM digital stereo soundtrack on a laserdisc, leaving only the laserdisc's "hi-fi-type" analog stereo soundtrack for users who lack DTS decoding capability. (The Dolby Digital soundtrack on a laserdisc occupies the space of *one* analog channel, leaving only a mono analog soundtrack but retaining the stereo PCM digital data. Thus, Dolby Digital laserdiscs can play in digital stereo or Pro Logic on virtually any laserdisc player.) DTS-encoded CDs, of course, utterly replace the conventional, two-channel PCM data with the proprietary DTS data format.

As a result, DTS discs can be mastered quite easily, be they CDs or laserdiscs. But without a DTS decoder, DTS laserdiscs yield only 1986-style analog stereo sound, and DTS CDs are unplayable, yielding nothing but full-scale digital noise, which is hideous, and potentially dangerous if inadvertently reproduced at high volume.

At this writing, a little more than three dozen "High Definition Surround" DTS CDs were available on the DTS and HDS labels, encompassing most genres, though conspicuously lacking in classical or new main-

stream pop. And with enthusiastic support from Universal Studios, about the same number of DTS laserdiscs were on the shelves, with more arriving every month. Despite considerable support from the audio world (DTS has sold numerous hardware licenses, mostly to high-end-oriented manufacturers), DTS has so far not been adopted as an "official" multichannel audio mode for DVD. Nevertheless, DTS indicates that, with Universal's recent announcement of its participation in DVD, DTS-format DVDs from Universal should appear in 1998, "barring any unforeseen technical, political, or economic issues."

At press time, technical details were still not available on how this will be accomplished, or whether these DVDs will also carry Dolby Digital or two-channel PCM soundtracks. On the face of things, it seems unlikely that a single disc could include all three formats, but time will tell. These and other marketing challenges facing DTS in home theater and home audio are, obviously, not insignificant.

Of course, equally significant questions arise about the decoding hardware required for DTS playback. The Millennium Model 2.4.6 under scrutiny here is one of the first standalone DTS decoders to reach the market, though DTS decoding can be built into A/V receivers or preamps with relative ease. B&K and Lexicon both offer preamps with DTS decoding, and Dolby Digital/DTS receivers are on the way from Sherwood and B&K.

The Millennium Model 2.4.6 is a one-trick pony. It functions as an outboard decoder for DTS only; confronted with any other digital format, or analog audio, it simply passes the signals along to subsequent processors (if any) in the system, then to amplifiers and speakers.

The Model 2.4.6 is laid out simply on a steel rack-mount chassis (the rack

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ears are removable). On the front are a power switch, a mini auto/manual toggle, a master volume knob, and small trim knobs for the surround, center, and LFE levels. Around back are six RCA-jack input/output pairs, one for each channel, a trio of digital ports comprising a coaxial input and output and one optical input, and a receptacle for the supplied AC adaptor, or "wall-wart," power supply. (Oddly, this is marked "AT&T Component Telephone Supply.") Also on the rear panel are eight system-configuration DIP switches of the sort that any computer geek would love.

Inside, a single circuit board carries both the analog input/output circuitry and the digital doings, which features a Motorola DSP56009 digital signal processor with the DTS logo screened on and three stereo digital-to-analog (D/A) converters.

The Millennium 2.4.6 can be set up several different ways. It could be wired directly to power amps and fed by a laserdisc/CD player for a DTS-only system. It can also function as an in-line processor wired before your power amplifier(s) but after any other processors, such as a Dolby Digital/Pro Logic decoder/preamp.

In its manual mode, the Millennium takes over when it sees a DTS-coded digital signal and disregards any analog audio that might be at its inputs. It sends decoded DTS 5.1-channel audio from all six outputs. When no digital input is detected, the Model 2.4.6 simply passes any analog audio at any or all inputs through to the corresponding outputs. When a non-DTS digital signal is detected, which is to say Dolby Digital or PCM digital from a CD, the 2.4.6 loops these out to its digital output, converting optical to coaxial if necessary. It can thus permit a single laserdisc/CD combi-player, or DVD player, to supply both DTS and DD decoders.

Confusing? Perhaps. But it's flexible. And there's more. In its manual mode, the Model 2.4.6's volume knob controls the DTS playback level (there's no remote control). However, the 2.4.6 switches over to pass-through mode automatically whenever its DTS decoder "unlocks," in other words, whenever there's no DTS input from the player or when the player pauses or stops. When that happens, the 2.4.6 delivers whatever analog source is present at its input, at whatever level the master volume control is set to. This can make for some heart-stopping mo-

ments if, say, you're listening to a DTS-encoded disc at low volume and pause playback to answer the phone, forgetting that you left your system preamp set to tuner with a very high volume setting.

Auto mode works similarly except that the Model 2.4.6's DTS output level tracks the upstream component's master volume setting. This is cleverly accomplished: The raw DTS digital noise is fed to the receiver/preamp's left/right analog inputs. The preamp's output, which is white noise whose amplitude is determined by its master volume control, is then fed back to the 2.4.6's analog inputs. So in auto mode, the 2.4.6 simply "looks" at the level of the incoming noise and sets its internal, six-channel electronic volume control accordingly. Very cute — but, unfortunately, it only works with DTS sources. For PCM, Dolby Digital, or analog sources, you must get up and switch the 2.4.6's front-panel toggle to manual to activate its pass-through mode; otherwise you'll hear nothing.

The rear-panel system-configuration DIP switches control the "downmixing" of surround, center, and LFE channels to the front left/right pair if the corresponding switch is thrown. The decoder's bass management is fixed: full-range center and surround, with an 80-Hz, 12-dB-per-octave two-way crossover for the LFE channel. If this badly mismatches the setup of your system for other modes, or doesn't suit your speakers, you're pretty much out of luck. In addition, the Model 2.4.6 imposes a proprietary re-equalization curve that's said to be "optimized for clarity and smoothness from the 20-bit ultrasonic and multidimensional DTS 5.1-channel digital audio format," presumably a THX-like mild reduction in top-octave response. The specs list this as -2.5 dB at 20 kHz.

I set up the Model 2.4.6 in my standard home-theater system, inserting it between a Dolby Digital preamp/tuner and my power-amp array (150 watts per channel across the front and 125 watts to each surround). I have a pair of B&W 803 Series 2 speakers and a B&W HTM center speaker across the front, a pair of near-full-range Citation dipole/bipole surrounds, and a B&W 800 ASW powered subwoofer. DTS and Millennium advocate full-range surrounds, preferably identical to the front left/right pair and located symmetrically. Not having a second pair of B&W 803/2s on hand, I used the Citations, which match them quite well.

- AK - Alaska Audio: Juneau • Pyramid: Anchorage.
- AL - Cohe's Electronics: Montgomery • Kincaid's TV: Tuscaloosa • Likis Audio: Birmingham • Palm Audio Video: Huntsville.
- AR - Custom Audio Video: Little Rock.
- AZ - Jerry's Audio Video: Phoenix, Tucson.
- CA - Access to Music: Lakeside • Accurate AV: S. Lake Tahoe • Ahead Stereo: Los Angeles • Audio Concepts: Long Beach, San Gabriel • Bay Area Audio: San Jose • Boots Camera: Fresno • Christopher Hansen West LA • Coast Home Ent.: Alacadejo, Orcutt • Creative Stereo: Santa Barbara • David Rutledge Audio: Palm Desert • DB Audio: Berkeley • Digital Ear: Tustin • Dow Stereo Video: San Diego & Suburbs, La Jolla, El Cajon, Chula Vista, Escondido • Dynamic Entertainment: Danville • Lee's Home Theater: Visalia • Monterey Stereo: Monterey • Paradyme: Sacramento • Performance Audio: San Francisco • Systems Design: Redondo Beach • Videatek: Westminster • Wilson Home Theater: Woodland Hills.
- CO - Listen Up: Denver, Boulder, Colorado Springs • Soundtrack: Denver & Suburbs, Boulder, Ft. Collins, Colorado Springs.
- CT - Al Franklin's: Greenwich • Audio Etc.: Orange • Carsons Stereo/Video: Danbury • Roberts Audio/Video: New London • The Sound Room: Westport • Stereo Shop: Hartford.
- DC & Washington Suburbs: Myer-Emco.
- DE - Sound Studio: Wilmington.
- FL - Absolute Sound: Writter Park • Audio Advisors: West Palm Beach • Audio Center: Deerfield Beach • Audio Video Design Group: Destin • Audio Video Stores: Tallahassee • The Audiohouse: Vero Beach • Cooper for Stereo: Clearwater • Hryl Stereo: Jacksonville • Palm Audio: Destin • Sound Components: Coral Gables • Sound Ideas: Gainesville • Sound Insights: Ft. Pierce • Stereotypes: Daytona Beach • Stuart A.V.: Stuart.
- GA - LaserDisc Enterprises: Atlanta • Merit TV: Columbus • Stereo Connections: Valdosta • Stereo Festival: Atlanta.
- HI - Sam Sunq Electronics: Honolulu, Waipahu.
- IA - Audio King: Cedar Rapids, Des Moines • Archer Audio Video: Ft. Dodge • Audio Video Logic: Des Moines • Audio Visions: Sioux City • Hawkeye Audio: Iowa City, Cedar Falls.
- ID - Ultimate Electronics: Boise • Wise Buy: Idaho Falls.
- IL - United Audio Centers: Chicago & Suburbs • Good Vibes: Champaign • Jon's Home Ctr.: Quincy • Sound Forum: Crystal Lake • Sundown A.V.: Springfield.
- IN - Classic Stereo: Ft. Wayne, Mishawaka • Good Vibes: Lafayette • Kings Great Buys: Evansville • Ovalion Audio: Clarksville, Indianapolis.
- KS - Accent Sound: Overland Park • Advance Audio: Wichita • Audio Junction: Junction City, Manhattan.
- KY - Ovation Audio: Lexington, Louisville.
- LA - Alterman Audio: New Orleans, Metairie • Lake Charles Music: Lake Charles • Mike's Audio: Baton Rouge • Wright's Sound Gallery: Shreveport.
- MA - Cookin': Chestnut Hill, Saugus • Goodwins Audio: Boston, Shrewsbury • Nantucket Sound: Hyannis • Northampton Audio: Northampton • Pittsfield Radio: Pittsfield.
- MD - Gramophone: Baltimore, Ellicott City • Myer-Emco: Gaithersburg, Beltsville, Rockville • Sight & Sounds: Eastern • Soundscape: Baltimore, MF - Cookin': Portland.
- MI - Pecar's Detroit, Troy • Classical Jazz Holland • Sound North: Iron Mt. • Stereo Center FRAV: Flint • Court St. Listening Room: Saginaw.
- MN - Audio King: Minneapolis & Suburbs, Rochester, St. Cloud • Audio Designs: Winona.
- MO - Independence A.V.: Independence • Reference Audio: Sedalia • Sound Central: St. Louis.
- MS - Ideal Acoustics: Starkville • McLelland TV: Hattiesburg • Players A.V.: Ridgeland.
- MT - Avitel: Bozeman • Rocky Mt. Hi Fi: Great Falls.
- NC - Audio Video Systems: Charlotte • Audio Visions: Wilmington • Now Audio/Video: Durham, Greensboro, Raleigh, Winston Salem • Audio Lak: Wilmington.
- NE - Custom Electronics: Omaha, Lincoln.
- NH - Cookin': Nashua, Manchester, Newington, Salem, S. Nashua.
- NJ - Hal's Stereo: Trenton • Monmouth Stereo: Shrewsbury • Sound Waves: Northfield • Woodbridge Stereo: West Caldwell, Woodbridge.
- NM - Ultimate Elect.: Albuquerque • Sound Ideas: Albuquerque.
- NV - Ultimate Elect.: Las Vegas • Upper Ear: Las Vegas.
- NY - Audio Breakthroughs: Manhasset • Audio Den: Lake Grove • Clark Music: Albany • Sycause • Stereo Exchange: Manhattan • Hart Elect.: Vestal • Innovative Audio: Brooklyn • Listening Room: Scarsdale • Rowe Camera: Rochester • Speaker Shop: Amherst.
- OH - Audio Craft: Akron, Cleveland, Mayfield Hts., Westlake • Audio Etc.: Dayton • Classic Stereo: Lima • Ohio Valley Audio: Cincinnati • Paragon Sound: Toledo • Stereo Visions: Columbus • Threshold Audio: Heath.
- OK - Audio Dimensions: Oklahoma City • Photo World: Stillwater, Shawnee • Ultimate Electronics: Tulsa.
- OR - Bradford's HiFi: Eugene • Chelsea A/V: Portland, Beaverton • Kelly's Home Ctr.: Salem • Magnolia HiFi: (Portland), Beaverton, Clackamas • Stereo Plant: Bend.
- PA - Audio Junction: Pittsburgh • Gary's Elect.: State College • GNT Stereo: Lancaster • Hart Elect.: Blakely • Hi Fi House: Abington, Broomall • Hi Ri Unlimited: Camp Hill, Harrisburg • Listening Post: Pittsburgh • Palmer Audio: Allentown • Pro Audio: Bloomsburg • Stereo Shoppe: Selingsgrove, Williamsport • Stereoland: Natrona Heights • The StereoShop: Greensburg.
- RI - Stereo Discount Ctr.: Providence.
- SC - A/V Design: Charleston • Custom Theater & Audio: Myrtle Beach • Upstairs Audio: Columbia.
- SD - Audio King: Sioux Falls • Sound Pro: Rapid City.
- TN - College HiFi: Chattanooga • Hi Fi Buys: Nashville • Now Audio Video: Knoxville • Modern Music: Memphis • Sound Room: Johnson City.
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- UT - AudioWorks: Salt Lake City • Crazy Bob's: St. George • Stokes Bros.: Logan • Ultimate Elect.: Layton, Murray, Orem, Salt Lake City.
- VA - Myer-Emco: Falls Church, Tyson's Corner, Fairfax • Audio Connection: Virginia Beach • Audiotech: Roanoke • Home Media Store: Richmond.
- WA - Magnolia HiFi: Seattle & Suburbs, Tacoma, Silverdale, Spokane • Pacific Sight & Sound: Wenatchee • Tin Ear: Kennewick.
- W.VA - Sound Post: Princeton.
- WI - Audio Emporium: Milwaukee • Absolute Sound & Vision: Sheboygan • Hi-Fi Heaven: Appleton, Green Bay • Sound World: Wausau.
- Puerto Rico - Precision Audio: Rio Piedras.
- Canada - A & B Sound: Calgary, Edmonton, Kelowna, Vancouver & Suburbs, Victoria • Advance Electronics: Winnipeg • Bay Bloor Radio: Toronto • Canadian Sound: Brampton, Ont. • Digital Dynamics: Clearbrook • Harrington Audio: Peterborough, Ont. • Kebecson: Montreal • Lipton's: New Market, Ont. • Sound Decisions: Duncan, B.C. • Sound Room: Vancouver • Stereoland: Windsor • Treble Clef: Ottawa.
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I directed the optical digital output from a DVD/CD player to the Model 2.4.6's optical port and the coaxial digital output from my laserdisc player to its coaxial port, running the 2.4.6's digital output back to one of my preamp's digital inputs. My preamp's six line-level outputs fed the 2.4.6's corresponding inputs, while the 2.4.6's outputs went to the five amp inputs and the subwoofer input. This was all reasonably straightforward, though I confess I had to think about it a bit before coming up with the optimum configuration for my system.

Since it has no on-board test-tone sequencer, the Millennium 2.4.6 requires the use of a DTS test disc, supplied with it, to adjust its front-panel channel-level trimmers; the CD feeds C-weighted pink noise to each of the six channels. I adjusted them using a sound-level meter in the usual way and quickly achieved good system balance (though the 2.4.6 makes no provision for left/right balance of the surround speakers). Channel levels held up well over a wide range of the Millennium's master volume knob.

There is no doubt that DTS 5.1-channel soundtracks can sound terrific as decoded by the Millennium 2.4.6. DTS and Millennium supplied a bunch of currently available DTS CDs and laserdiscs, so I had plenty of variety to choose from except serious classical recordings. One of the most recent recordings is a DTS reissue of the Eagles' *Hell Freezes Over*, which is a state-of-the-art 5.1-channel live pop recording (with some judiciously applied, after-the-fact studio overdubs, I'll betcha). The DTS disc sounded fabulous — airy, defined, with a combination of solidity and 3-D presence in the bass that is rare in recorded music. Vocal renditions were present and balanced — very real sounding. (To be perfectly frank, anything that can make me *want* to put on an Eagles disc is probably pretty special.)

The most natural-sounding DTS CD was *Remembering Bud Powell* by Chick Corea & Friends, a straight-ahead, small-combo be-bop studio session recorded in the 5.1-channel format with fully detailed piano sound, in-the-room horns, and entrancing string bass and trap drums. The system's ability to "float" nuanced transients, such as delicate high-hat brush strokes or soft pizzicato bass fingerings, was almost uncanny. And that applied to most of the DTS CDs. Another thing: Though you might expect 3-D

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USER'S REPORT

effects to be the big draw, I found DTS music playback's delivery of big, cohesive, stable, and believable "front-stage" sound to be its leading asset.

Among the movie laserdiscs at my disposal, many sequences in the excellently produced *Casper* and just about every frame of *Apollo 13* were stand-outs. DTS delivered the same advantages I've come to value in Dolby Digital recordings: more natural ambience, cleaner, more "in-the-picture" dialogue, and, of course, stunning impact from the LFE channel and the ability to deliver full-range, discrete-channel surround effects. I heard the same smoothness and cohesive front space in the better movie sequences that I had in the best music recordings.

Of course, the big question on everyone's mind is, does DTS sound better than Dolby Digital? My answer is unequivocal: I have no idea.

First, as near as I can determine, the mix of every DTS production at my disposal was different from the mix of the same recordings in any other format, so the comparison is one of apples with oranges. Second, without direct A/B comparisons of DD and DTS discs mastered from the same six-channel mix, I would be very reluctant to draw any conclusions.

Whatever the case, however, some of the DTS music productions I heard left me asking questions — many of the same sort raised more than twenty years ago by the "quad" experiment. Examples: The Eagles disc frequently mixed hand percussion like claves and congas to one of the rear channels. On the DTS version of the Allman Brothers' *Live at the Fillmore East*, the perspective was so severely wrap-around that it sounded as if I were onstage, seated on Duane Allman's floor monitor. Even on the Chick Corea & Friends recording, Roy Haynes's drum kit was mixed so that the sound spread all the way from left side to right side, suggesting that his arms are each about 12 feet long. I did not like any of these "tricks," but I recognize the need to make a new multichannel format sound more, well, multichannel.

There are related issues of speaker and listener position. With most DTS music recordings I found that symmetrical speaker placement and identical speakers probably would, in fact, work best; this is the "official" recommendation. But for movies I definitely preferred dipole surrounds close to the THX-standard location — though as a result the surrounds sounded too loud

by 2 or 3 dB. The best compromise I came up with was running the Citations in their bipolar mode and shifting them rearward about 18 inches, which worked quite well for all DTS material. Of course, I had to undo all that for Dolby Digital and DSP surround sources in order to return the system to its previously calibrated state. In principle, you *could* have two different surround-speaker pairs (and amplifiers), and a line-switcher to change from mode to mode, but that seems unlikely for ordinary folks.

I recognize that I'm asking more questions than I'm answering, but that is the nature of a new format. Returning to the Millennium 2.4.6, I have few complaints. The processor sounded superb — dead quiet, open, smooth, musical, detailed — though I was left with a strong suspicion that it actually sounded a shade better in its manual mode, which I mostly used.

Ergonomically, however, all was not bliss. The whole auto/manual thing is going to confuse some users. The 2.4.6 can pump out a pretty strong noise impulse (tick) as it locks or unlocks to the DTS code in auto mode. Worse, when you fast-search a DTS CD or laserdisc in manual mode, raw digital noise is output. At high master-volume settings this can be disturbing, to say the least: it's unacceptable for a finished product. Also, the Millennium 2.4.6 precludes remote volume control in many systems, an irritation in any home theater. There's also no convenient way to temporarily modify individual channel levels — for instance, to cut the subwoofer level for recordings with grossly overbaked bass. A final caveat: the 2.4.6 is incompatible with any CD player that modifies the digital data fed to its outputs.

But for early adopters who want to hear what DTS can do firsthand, the Millennium 2.4.6 works very well indeed. While a \$699 experiment won't appeal to everyone, the price of admission is significantly lower than for any currently available, multimode solution that includes a DTS option. For now, the Millennium remains the least expensive DTS-only add-on you can buy. If you have serious intentions toward DTS, or if you are seriously into surround sound and digital audio, it warrants a listen.

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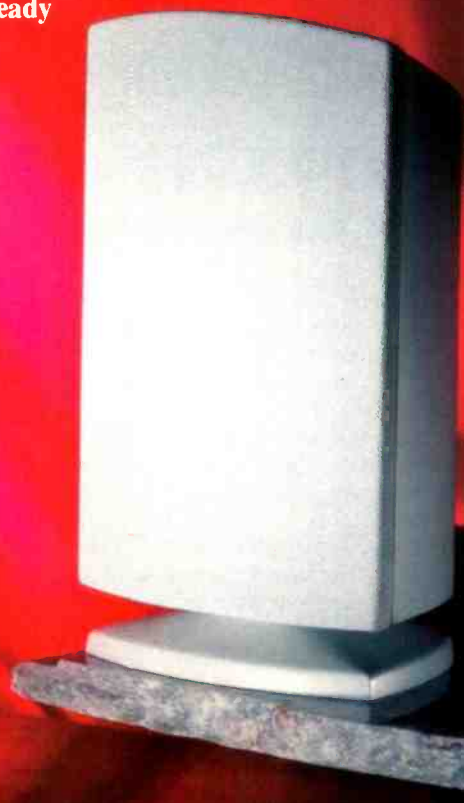
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USER'S REPORT

large "boundary" surface. When you place a typical speaker — one that has been designed for best response in freestanding placements — in a cabinet, on a crowded bookshelf, or next to a large reflecting object like a big-screen TV, an equipment cabinet, or a wall, the midbass can become noticeably boosted. Therefore, flipping the rear-panel Placement switches of the K.5 and CR.5 from Normal to Boundary lowers output below 400 Hz by about 2 dB to compensate.

My measurements confirmed this operation and the efficacy of the Placement switch in keeping the midbass in line during typical close-boundary placements. Our normal front-speaker placement, however, is freestanding, with the speakers (including the center) on stands away from the walls. With this placement I was able to obtain a listening-position frequency response that, with one exception, closely matched Snell's published curves.

The best response I was able to obtain from the left front speaker operating in conjunction with the subwoofer was for the most part very smooth but not flat. While the overall response can be stated as a very good ± 3 dB from 40 Hz to 20 kHz, much of that deviation is taken up by a gentle slope downward from 1 to 20 kHz. That spread also subsumes a distinct dip below the upper-midrange level in the octave around 200 Hz, which in listening tests led to a slight lack of body in the sound quality (the range affected falls around middle-C, an obviously

important area). Since this dip was not visible as such in close-miked measurements of the K.5's woofer and port, and since the effect is above the primary operating range of the PS.10 subwoofer, after considerable experimentation with speaker placement I concluded that the anomaly stems from the combination of a tendency toward a dip in the K.5's basic response (there is a broad 2-dB dip between the speaker's output at 50 Hz and 1 kHz visible in Snell's own curves) and an interaction in our listening room between the K.5's height above the floor with a ceiling-to-floor resonance effect.

At still lower frequencies, the PS.10 subwoofer did very well, providing useful output to below 28 Hz. And in a demonstration of the sub's amplifier power and lack of signal limiting, I was able to obtain clean bass at very high volumes with no sense of strain with very high (but not yet deafening) levels of various types of pop music and classical pipe-organ music, far more critical material than most action-movie soundtracks (with which the PS.10 performed thunderously well, too). Although the frequency responses of the CR.5 center speaker and the left/right K.5s were similar, their nonmatched driver complements provided a less close sonic match on panned pink-noise test tones than I have heard from systems employing either identical front speakers or front speakers with identical driver/crossover complements. Still, with both stereo music and surround soundtracks imag-

ing was excellent at all times, and the tonal quality was fairly neutral, a tribute to the basic smoothness of the speakers' responses both on-axis and, especially, off-axis. And if it was a little less sparkling than flatter-measuring speakers we have tested, the system never became shrill at high, life-like playback levels.

The surrounds were more problematical. Being bipolar devices that, in our listening setup, were located only 6 feet to the sides of the listener, they imaged all too well during surround material, including Dolby Digital soundtracks, and especially in ambience-enhanced music playback. It proved impossible even with the best of ambience processing (by Lexicon and Yamaha) to create an even distribution of reverberation around the room. It always "pooled" around the surround speakers, with a gap in reverb between them and the fronts.

Measurements of the band from 500 Hz to 2 kHz (essentially the range of a surround-speaker balancing tone) showed that the level radiated by the SR.5s toward the listener was only 1 dB less than that directed along the walls by the sideways-facing drivers, a very fat dog bone. Contrast this with the performance of a typical good dipole, which can produce 6 to 7 dB more sound directed along the walls than toward the listeners and a much more even surround field *in our setup*.

Those italics stress that my perception of this behavior was greatly dependent on the speakers' location. In particular, there is no doubt that a more distant placement of the surrounds — which could amount to only a couple more feet — would greatly alleviate the pooling effects. That is impossible in our listening room but may be easily accomplished in yours. The surrounds seemed fine otherwise, producing very flat (± 2.5 -dB) response between 125 Hz and 4.6 kHz at our listening position.

On the whole, I consider the Snell K.5 system to be very good, even excellent if you can get around some of the placement problems I had (in our room, equalization of the midbass dip helped greatly). It certainly played with a basic neutrality and cleanliness at high levels, qualities that have always been defining characteristics of Snell speakers.

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DVD DERBY

by Daniel Kumin

Three New Players Out of the Gate

AT LAST, the spectacular new DVD format that was hyped for more than a year before the first players even hit store shelves is off and running. Audio/video enthusiasts are placing DVD bets at inventory-decimating rates, leaving manufacturers and retailers scrambling to meet demand. As of this writing more than 200,000 DVD players have been sold, and it is expected that a few hundred movies will be available on DVD in time for Christmas. Some large retailers have already dropped the price on selected movie discs from \$24.95 to \$19.95. And while a few short months ago there was only a handful of DVD players to choose from, today upwards of twenty models are available from a dozen or so manufacturers.

To evaluate the latest entries, we chose DVD players from three familiar names in the world of audio and video: JVC, Philips Magnavox, and Samsung. I poked and prodded each player, then patched it into a home-theater system comprising a B&K Components AVP4090 A/V preamp with Dolby Digital (DD) and Dolby Pro Logic decoding, five 150-watt channels of amplification from Parasound, a pair of B&W Model 803 Series 2 front left and right speakers, a B&W HTM center speaker and Model 800 ASW powered subwoofer,

TESTED

JVC
XV-1000

PHILIPS
MAGNAVOX
DVD400AT

SAMSUNG
DVD905



and two Citation 7.3 dipole surround speakers. I focused on the use and listening/viewing part of the evaluation using both DVD movies and CDs, while technical editor David Ranada probed the players on the test bench (see data boxes on pages 92 and 96).

JVC XV-1000

The first DVD player on our list comes from JVC, inventor of the VHS format and arguably the patriarch of the whole home-theater movement. The XV-1000 is assembled conventionally enough on a CD-like chassis (in truth, like most first-generation DVD players, the XV-1000 probably *is* a CD platform), with all pushbutton controls except for a level knob next to the front-panel headphone jack.

The front-panel buttons provide only basic transport controls and DVD's soon-to-be-familiar on-screen-menu navigation controls in the form of a cluster of left, right, up, and down arrow keys. Although these are shaped differently from the transport controls directly above them and have distinguishing graphical arrows, their similarities in location, size, and design were sufficient to occasionally confuse my control-tapping finger — and hitting Chapter Skip when you want Menu can be annoying. I would have put these controls on the opposite side of the faceplate, which is largely empty. Everything else requires the remote, which has a reasonably ergonomic (if distinctly righthanded) layout featuring a radial sweep of main keys arrayed to fall under the thumb — quite nice.

The blue dot-matrix display is clear and readable but rather bright, as is the red stripe directly below it that glows

whenever a DVD is loaded (as opposed to a CD). A dimmer would have been nice. The whole player is finished in a sort of dark, chocolate gray except the disc-tray edge, which is silver. It looks very handsome, though I can't predict how well it might match a stack of conventional black A/V equipment.

Around back there's a single video output in both composite-video (RCA-jack) and S-video (multipin-DIN) formats, but there are no component-video (color-difference) outputs, which are found on some high-end DVD players. Stereo audio jacks, a removable power cord, and a pair of jacks for JVC's AC-CompuLink "smart remote" system join a single, optical digital audio output to round out the connection facilities. I find the lack of a coaxial digital output vaguely troubling, because at least one Dolby Digital A/V preamp and one DD receiver I can think of accept only a coaxial digital input. That isn't JVC's fault, of course, but as Mom was so fond of pointing out, two wrongs do not make a right.

Inside, the XV-1000 is tidily assembled, hardly seeming like a first-generation product. The centralized disc-transport/optical-pickup assembly has a solid-looking housing that even I, fearless investigator of A/V gear, declined to disassemble. Its internal secrets must remain hidden (maybe if I'd had *two* players . . .). Digital-to-analog (D/A) decoding uses JVC's 1-bit PEM (pulse-edge-modulation) system and K2-Interface (a jitter-reducing scheme, though the name might better suit a high-altitude helicopter). The XV-1000 is specified as able to decode 20-bit data with a 96-kHz sampling frequency, but no music recordings are

available yet in that format, nor is there any firm guarantee that they ever will be.

The JVC XV-1000's personality combines generally smooth operation with a deep feature set (see the checklist on page 94). Response to transport commands was somewhat brisker than that of the other players reviewed here, and the XV-1000's slow-play options, ranging from half-speed to one-thirty-second speed by factors of two (plus one-third speed), are the fullest I've seen yet. Slow motion was crystal-pure, as it's been on every DVD player I've encountered.

Fast search tended toward still-frame jerkiness — to some degree this is intrinsic to all DVD machines — and was a bit shakier than on the other two players, and rather more aggravating to use. You have to hold down the skip button to invoke scanning, which begins at about 10x normal speed for about 10 seconds and then shifts to about 40x, "snapshot" search. It worked fine in both directions, but I didn't like having to hold down the key and wait to reach the higher speed. Furthermore, there's no on-screen indication of the current search speed as on the Samsung and Philips Magnavox players, both of which follow the more common scheme of letting you cycle through the fast-search speed choices, then "sticking" at the high speed until you hit the play button again. While I liked the JVC's top search speed, significantly faster than the Samsung or Philips Magnavox players, I missed the cueing precision available from a steady 2x, 4x, or 8x speed.

Additional features include resume-play memory (which lets you store a playback point in memory by hitting the Resume button), parental control lockout-by-ratings as found on most DVD decks (of dubious real-world utility because most kids will figure out how to disable it in no time), and multi-aspect-ratio display setup. There's also a full complement of the standard CD features, including A-B repeat and programming options, most of which can be used with DVDs, too.

JVC's on-screen menus are useful, generally clear, and attractive. Hit the remote's Menu button and the picture (with sound) is displayed in a quarter-screen window, while the rest of the screen shows icons for repeat, search, and title functions as well as "buttons" for selecting menu, soundtrack, and subtitle languages, subtitle on/off, and



DIMENSIONS: 17¼ x 4½ x 13 inches. **WEIGHT:** 10½ pounds. **PRICE:** \$900. **MANUFACTURER:** JVC, Dept. SR, 41 Slater Dr., Elmwood Park, NJ 07407; telephone: 800-252-5722.

camera angle, if these features are implemented on the loaded DVD. The video window is a pretty cool feature that is unique among the three players reviewed here and rare among the other models I've seen.

The XV-1000 also features a two-position Picture control, with one setting producing a very slightly softer image. (This is for those who find DVD's high resolution too hard on the eyes?) The on-screen display also shows current time and chapter locations; the front-panel display shows only elapsed time. The DVD Menu function, accessible via a front-panel button or the remote, automatically pauses the machine and brings up the loaded disc's menu (if it has one) for chapter selection and so forth, displaying a still of the movie's package art in a small window.

The XV-1000's various user-selectable settings, such as English or German for subtitles, are indicated only with cryptic labels like Audio-1 or Subtitle-2. It's up to you to determine if what you're hearing is Dolby Digital or Dolby Surround, or if you're reading Japanese or Korean ideographs. (This is particularly disturbing with those DVDs that default to their stereo soundtracks rather than Dolby Digital 5.1 — whose brilliant idea was this, anyway?)

The remote control is generally good. The main keys fall gracefully to your (right) hand, and differing key sizes, shapes, and colors help you learn the lay of the land. But the use of identical key pairs for previous/next (skip) and stop/play (pause) causes some trouble for us left/right-challenged types. Moreover, the XV-1000 remote's Enter key is outside its cruciform cursor-key quartet instead of in the middle, which makes for a distinctive look but, ergonomically speaking, is weird.

Performance-wise I had no complaints. The JVC player worked with no glitches, and its images looked terrific. Visuals were defined and deep — the XV-1000's picture presented excellent blacks and subjectively great detail. Digital artifacts were present on rare occasions — most often in the form of a subtle "tiling-up" of dark frame regions in motion-intensive shots — but they'd only be noticeable if you looked for them rather than simply watching the movie. Dolby Digital playback was simply outstanding, as with the other two players, reinforcing my initial impression that DD on

DVD seems to sound subtly better than 5.1-channel soundtracks on Dolby Digital laserdiscs.

As a CD player, the XV-1000's performance via its analog audio jacks was very good. Sonically, I would rank it comfortably alongside some very well-regarded \$500-range CD players. (JVC's PEM 1-bit D/A-conversion system is one of the best-sounding mass-market converters available.) Disc handling was fine, though the XV-1000, like all DVD players I've tried so far, is slow to initialize any disc — it has to figure out what flavor of disc has been inserted before it can read it. CD-mode response to transport commands such as track skip and fast search was only slightly slower than on today's better CD players. I'd have no qualms about recommending the XV-1000 as a one-box solution to DVD and CD playback, even in a musically demanding system. In fact, its stereo analog outputs might just sound better than those supplied by the D/A converters found in some Dolby Digital A/V receivers and preamp/processors.

A final note: In addition to DVDs and CDs, the XV-1000 also plays VHS-quality Video CDs (popular in some Asian countries for karaoke programs). JVC does not recommend playback of CD-R (recordable) discs because playback "may damage the contents of the disc." However, the XV-1000 does have a screen-saver, which automatically kicks in after 10 minutes in pause or stop mode, that displays a computer-generated city skyline with the characters D-V-D — and how many other home appliances can do *that*?

PHILIPS MAGNAVOX DVD400AT

The low-profile DVD400AT is a high-value introduction from a manufacturer that needs none. Co-inventor of the CD and creator of the laserdisc format, the CD's antecedent, Philips was also one of the DVD format's core developers.

The DVD400AT wears both Philips and Magnavox logos, neatly curing the company's split brand personality of the past decade or so. Its design team's mantra appears to have been simplicity. The front panel presents only seven slim keys along a matte-silver trim edge, plus a power button, and they control only the most basic

transport functions. A blue LED window, centered above the disc drawer, presents disc and time data simply and legibly, though the surface is a bit too reflective — glare can be a problem, depending on the room light and your viewing angle. The exterior is an attractive textured gray, and assembly and finish quality appear to be very good within the player's obviously cost-conscious design.

The theme of simplicity carries around back, where the only connections are stereo analog audio output jacks, composite- and S-video outputs, and a single coaxial digital audio output. Also to be found on the back side is a small slide switch marked AC-3 (Analog Off)/PCM (Analog On). For DVD Dolby Digital playback or CD playback with an outboard D/A converter (or one built into a downstream component), you set the switch to the AC-3 position; for two-channel analog stereo or Dolby Pro Logic playback, you set the switch to the PCM position.

Thus, setup is about as easy as it gets with a DVD player. If your receiver or preamp has no digital input, you connect the player's analog outputs for stereo (and analog-domain Dolby Pro Logic) playback. If you have a digital input, use the player's digital output for Dolby Digital or PCM-stereo playback.

The DVD400AT is solidly if cost-effectively assembled. Inside, a dual-laser pickup is clearly visible within the center-mounted disc-transport module — and so is a Toshiba label on the power-supply board (the player is derived from the base Toshiba platform). The heart of its internal operation is found entirely on a single compact printed-circuit board enclosed in a noise-shielding "tin can," frustrating chip hunters like me.

Playing DVDs was simple and straightforward. Disc response was generally quick, and fast-scan viewing was notably smooth and controlled. You can scan at 2X or 8X speed in either direction (but no faster), and the selected speed, which stays set until you hit the play button again, is displayed on screen — a nice touch. Slow-motion play cycles through half, one-eighth, and one-sixteenth speed in forward only. The operation of these modes was very stable, as was the still/step motion.

Philips endowed the DVD400AT with a full complement of programming and repeat functions that apply

COMPARISON TESTS

to both DVD and CD playback. The player also includes the parental-lock-out function. It cannot play CD-R or Video CD discs, even though it was Philips that developed the latter format (stillborn in the Western world).

Selecting DVD menus was straightforward thanks to the remote control's sensibly positioned Enter key, which is centered in a quartet of cursor buttons. The Menu key, however, is inconveniently located to the northeast. The DVD400AT cannot display video while bringing up the on-screen displays of its native options. The options are mostly presented as plain-vanilla yet quite readable text, including the choice of soundtrack and subtitle languages, subtitles on or off, DVD menu, and screen aspect ratio. There's also an extensive menu for DVD/CD programming.

One DVD400AT feature unique among the three players reviewed here is a simple, direct-access system for selecting titles, chapters, and CD tracks, called up via the remote's "T" key. This can save several steps of DVD-pausing and menu crawling if you already know where you want to go. More valuable still is that when you change the audio mode or subtitle language during play using the remote's Audio or Subtitle keys, text appears momentarily on screen ("English" or "Dolby Digital 5.1," for example) to indicate which option you've selected — or to tell you that the selected option is not available from the loaded disc. This is in contrast to the JVC player, which provides no such feedback.

The remote has an uninspired collection of same-size, same-color keys,

and while the primary controls do at least get a different background color, legibility is not great. I eventually learned my way around reasonably well, but a more ergonomically conceived handset would be a real plus.

DVD playback was steady and free of surprises except for one apparently isolated instance of spurious skipping when the player suddenly leaped forward two chapters unbidden. Video quality was superb, as expected, with outstanding definition and freedom from noise. I found that in repeated A/B comparisons, the Philips Magnavox player seemed ever so slightly less prone than either the JVC or Samsung to digital "tiling" artifacts, a subtle effect that would be invisible to most viewers unless they were told what to look for.

However, the DVD400AT yielded a picture that was noticeably lower in contrast (less black level) than either the JVC or Samsung players, which made for a slightly softer, grayer-looking image — an effect that could be compensated for easily using standard TV-set controls. Yet after considerable time spent fiddling with my screen and A/B-ing the test players using *Fly Away Home*, a great-looking DVD that I had two copies of, I concluded that the picture from the Philips Magnavox player was just discernibly less detailed and "deep" than the one from the JVC or Samsung players. Of course, this is a purely subjective observation — and the differences were subtle indeed. For perspective, video from the DVD400AT player was superior to that from even the finest laser-disc or S-VHS videotape.

In CD mode the DVD400AT was

easy to use and sounded excellent. Disc handling and transport were quick and reliable. Although the sound quality did not quite match the full-resolution standard of today's best \$500 CD players, it was certainly competitive with that from players in the \$300 to \$400 range, which is to say that it delivers very fine sound.

The Philips Magnavox DVD400AT is positioned solidly in the pack of entry-level DVD players currently on store shelves nationwide, which is to say it is priced to sell. And it delivers fine value, along with a welcome dose of simplicity in a field that can be plenty confusing.

SAMSUNG DVD905

Samsung's DVD905, the first DVD player from one of the big Korean manufacturers, springs from a source that for more than a decade has been instrumental in driving the value-quotient of home-theater gear with well-designed yet aggressively priced TVs and VCRs. So it's a bit unexpected that Samsung's first foray into DVD is not a price leader at all but a rather high-end player with a built-in Dolby Digital decoder in addition to some unique features.

The player is finished in an attractive gun-metal gray that should complement, though not match, most contemporary gear, and its front panel is very clean. In addition to a centrally located status display and disc drawer, there are only four buttons: a large four-way rocker that handles basic transport functions and three small keys labeled Standby/Power, Open/Close (drawer), and FLT Bright (to dim or turn off the player's display).

Around back, the DVD905 has eight analog audio jacks. The two labeled L1 and R1 are for use with a two-channel or Dolby Pro Logic system, while the remaining six carry Dolby Digital's 5.1 channels. These jacks are designed to feed a Dolby Digital-ready receiver (or preamp/processor) with six-channel discrete inputs. The DVD905 also has a pair of digital outputs, one coaxial and one optical — excellent. That should make it easier to add the player to an existing system since some A/V components have a coaxial *or* an optical digital input but not both. Why the DVD905 — and other Dolby Digital-equipped DVD players, for that matter — does not offer a digital audio *input* or two is a mystery to me. It wouldn't



DIMENSIONS: 17¼ x 3¼ x 12¼ inches. **WEIGHT:** 7½ pounds. **PRICE:** \$500. **MANUFACTURER:** Philips Magnavox, 64 Perimeter Center E., Atlanta, GA 30346; telephone, 800-531-0039.

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cost much at the factory, and it would extend the future potential of the machines dramatically, eliminating one objection to their ilk: If your only DD decoder is in the DVD player, what do you do when a second DD source, like HDTV, comes along in a year or two?

On the video side, there are two composite-video jacks, one multipin S-video jack, and four RCA-style jacks labeled R, G, B, and S (for red, green, blue, and sync). There are no component-video connectors, currently found on a few high-end DVD players and TVs.

These computer-standard RGB outputs do not deliver the progressive-scan video a computer monitor would "expect," which is to say that the DVD905 contains no scan-doubling circuitry. So unless you have a scan-doubler, or a very high-end front-projection multimedia monitor with one built in — we're talking five figures here — the RGB outputs are irrelevant.

What appears at first glance to be a curious design choice has a very rational explanation. In the Asian market that accounts for a significant portion of Samsung's business, the company expects industrial DVD applications — business presentations, training films, and so on — to be a major part of the total DVD market. Given that a typical corporate playback system includes a scan-doubling, RGB-equipped video projector or computer monitor, the DVD905's RGB outputs begin to make sense.

The Samsung player is also somewhat unconventional under the hood. All the digital doings are on a single circuit board that sits upside down over the transport assembly. Thus, the circuit-trace side is only a half-inch away from the inside of the player's top cover — don't stack anything small and heavy, like your Oscar statuettes, on top of this baby! That unusual arrangement prompted me to remove the circuit board (don't try this at home, kids), which revealed a C-Cube Systems DVD chip, a single very large-scale IC that handles the primary MPEG-2 video decoding functions as well as the Dolby Digital audio decoding.

The DVD905 has the usual complement of DVD goodies, including resume-play memory and language, subtitle, and aspect-ratio options as well as an extensive complement of DVD/CD programming options (except A-B repeat). It does *not* have the brain-dead parental-control function found



PHOTO BY DAVE SLAGLE

on most other DVD players. That's no great loss in my book since any kid who's sufficiently bright to surf the Net (to the *Baywatch* Web site, no doubt) can disable these things in about 30 seconds.

The DVD905 worked quite nicely in my system, delivering very fine performance. Nevertheless, I did note a couple of idiosyncrasies. First, it was

very slow at loading a DVD — 22 seconds from a power-off "cold boot." In contrast, the JVC and Philips Magnavox players took 12 and 14 seconds, respectively. Second, the Samsung player skipped forward unexpectedly on two occasions — occurrences rare enough to qualify as an unexplained phenomenon not worth worrying about. Response to skip and pause

SAMSUNG DVD905

DOLBY DIGITAL (AC-3) PERFORMANCE

All data obtained with digital signals from Dolby Labs' test DVD. All surround outputs (including subwoofer) turned on.

FREQUENCY RESPONSE

front left, right ... 20 Hz to 20 kHz +0.1, -2.7 dB
center ... 150 Hz to 20 kHz +0.09, -3 dB
surround left, right ... 160 Hz to 20 kHz +0.11, -3 dB

NOISE (A-wtd, re reference output) ... -94.2 dB

EXCESS NOISE (typical results, with signal)

16 bits (EN16) ... +11.25 dB
18 bits (EN18) ... +21.8 dB

DISTORTION (worst case, 1 kHz)

at 0 dBFS* ... 0.011%
at -20 dBFS* ... 0.064%

SUBWOOFER-OUTPUT FREQUENCY RESPONSE

9 dB/octave rolloff above -3 dB point at 185 Hz

MAXIMUM SUBWOOFER OUTPUT ... 2.28 volts

SUBWOOFER DISTORTION AT MAXIMUM OUTPUT ... 0.0024%

CHANNEL SEPARATION ... >81.8 dB

* decibels referred to digital full-scale

The relatively high low-frequency limits of the center and surround frequency responses are a result of the bass-redirecting high-pass filtering applied to them (the missing bass shows up in the subwoofer output). The application of high-pass filtering only to the center and surround channels may cause hookup problems with some six-piece home-theater speaker systems of the kind we typically review. These require high-pass filtering on all channels and at frequencies about an octave lower than provided for with the Samsung player.

To get the bass to come out right you'd either need to use a powered subwoofer connect-

ed at line level with the subwoofer's high-pass loop-back outputs in the signal path (a setup requirement not covered in the Samsung manual) or you'll need full-range front left and right speakers and enough amplifier power to drive them to high levels. This player provides an excellent example of why a built-in Dolby Digital decoder is not a desirable feature in a DVD player. Use the Samsung's digital output to feed an amplifier/receiver containing its own Dolby Digital decoder and bass-management circuits, and you'll have an infinitely better chance of getting the bass to come out right.

— David Ranada

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CIRCLE NO. 26 ON READER SERVICE CARD

Features Checklist

	JVC XV-1000 (\$900)	PHILIPS MAGNAVOX DVD400AT (\$500)	SAMSUNG DVD905 (\$800)
PLAYBACK CAPABILITIES			
DVD's	✓	✓	✓
CD's (audio only)	✓	✓	✓
CD-single 8-cm discs (rare)		✓	✓
Video CD 12- or 8-cm discs (rare)	✓		✓
VIDEO OUTPUTS			
Composite-video	✓	✓	✓
S-video	✓	✓	✓
Component-video			
RGB			✓
AUDIO OUTPUTS			
Stereo (two-channel)	✓	✓	✓
Multichannel analog			✓
Coaxial digital (PCM/AC-3)		✓	✓
Optical digital (PCM/AC-3)	✓		✓
GENERAL CONTROL FEATURES			
Picture-parameter adjustment	✓		
On-screen setup menu	✓	✓	✓
Menu-language selection	✓	✓	✓
DVD-SPECIFIC FEATURES			
Fast-scan forward speeds	2	2	3
Fast-scan backward speeds	2	2	3
Slow-motion forward speeds	5	3	3
Slow-motion backward			
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		✓	
Programmed playback		✓	✓
Parental program lockout	✓	✓	
Macrovision copy protection	✓	✓	✓

commands was reasonably rapid, and its fast-search speeds at 2x, 4x, and 8x normal were smooth (although things were a bit smoother moving forward than backward). Operation in slow motion, with half-, quarter-, and one-eighth-speed options, was also good.

DVD picture quality was outstanding, with fine definition and color depth and excellent detail. Overall, the Samsung's picture was about equal to that of the JVC's, though its cast was slightly warmer. Digital video artifacts were about the same in frequency and

visibility as from the JVC player, that is, only rarely visible to alert viewers who know what to look for.

CD performance was about on a par with entry-level CD players. It delivered very fine sound that was not quite in the same league as that of the very best CD players, something the JVC player approached more closely. But — and this is worth noting — in many real-world systems, the “native” sonics of a DVD player would be totally irrelevant because its digital output would feed the digital input of an A/V receiver or preamplifier whose internal digital-to-analog conversion circuits would do the deed in every mode, be it stereo, Dolby Pro Logic, or Dolby Digital.

I auditioned the DVD905's Dolby Digital outputs by wiring them directly into my power amps and powered sub, using their channel-trims for volume adjustment. This worked fine — though it's impractical for daily life! — and sounded very good. But I must point out that such an arrangement means you're stuck with Samsung's resident bass-management settings (an Achilles heel of any DD-equipped DVD player), which are configured for only three “small” speakers (center and surrounds), each with a 160-Hz (!) high-pass filter, and a matching low-pass subwoofer output that includes the redirected bass from the center and surround channels plus any content from Dolby Digital's low-frequency effects (LFE) channel. Between this system-configuring straitjacket and the fact that you won't be able to add additional Dolby Digital sources down the road, chances are that you'll wind up using a downstream component's Dolby Digital decoder sooner or later anyway.

I liked the DVD905's remote quite a bit. It's big, with generously sized and spaced keys, and the oversized set of cursor keys includes a centrally located Enter key. The remote exploits a wide variety of shapes, colors, and tactile feedback from the controls to make it easy to operate — it even uses that cool glow-in-the-dark plastic on its main transport keys. The remote also comes preprogrammed with basic control codes for several dozen popular TV models.

At \$750, the Samsung DVD905 offers lots of features per buck, and it was generally very easy to use. More important, its solid audio and outstanding video performance should continue to please long after most

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Audio, Jan. 1997

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Tower II is a three-way system substantially larger than Tower III. It has two 8" woofers, a 5 1/4" midrange, and a 1" soft-dome tweeter.

The large cone area of Tower II's drivers contributes to an effortless sound quality, giving music a strong feeling of “presence.” That presence, along with Tower II's smooth, musical octave-to-octave tonal balance and precise stereo imaging, produce what we think is the finest

speaker system ever offered under \$1,000.

Tower II is finished in vinyl that simulates black ash or Vermont walnut. Bi-wire/bi-amp capable.

Factory-direct price: \$999.99 pr.

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The flagship of the series is the three-way, bipolar Tower by Henry Kloss. Bipolar dispersion results in very realistic, three-dimensional sound, and ensures proper stereo effect in many listening positions.

“Tower II can generate the gut-wrenching bass and do justice to a first-rate music system. To top it off, the price is right!”

Stereo Review

Tower has two forward-facing 8" woofers; a forward-facing 5 1/4" midrange driver; a 1" soft-dome tweeter; and rearward-facing midrange and tweeter units identical to those in front.

Because it has even more cone area, Tower's feeling of “presence” is stronger than that of Tower II. That presence, when combined with Tower's bipolar design, results in life-like sound that is nothing short of incredible. Available in lacquered walnut or black ash veneers. Tower is one of the finest speakers ever offered. Bi-wire/bi-amp capable. **Factory-direct price: \$1,499.99 pr.**

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CenterStage is a two-way, three-driver center channel speaker that complements our Tower speakers. It has substantial bass reach and the

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Measurements

	JVC XV-1000	PHILIPS MAGNAVOX DVD400AT	SAMSUNG DVD905
DVD VIDEO PERFORMANCE (Test patterns from Sony and Dolby test DVDs using composite-video output)			
SETUP LEVEL	0 IRE*	+7.5 IRE*	0 IRE*
100%-WHITE-LEVEL ERROR	+5 IRE*	-3 IRE*	-3 IRE*
DIFFERENTIAL PHASE	<1°	2°	3°
DIFFERENTIAL GAIN	<1%	2%	5%
CHROMINANCE NONLINEAR PHASE	<1°	<2°	<1°
CHROMINANCE NONLINEAR GAIN	2.5%	4%	<1%
HORIZONTAL LUMINANCE FREQUENCY RESPONSE			
at 4 MHz	-4.2 dB	-1.5 dB	-0.1 dB
at 5 MHz	-6 dB	-3.1 dB	-0.8 dB
at 6 MHz	-9.4 dB	-4.4 dB	-3.9 dB
EQUIVALENT ON-SCREEN RESOLUTION	480 lines	480 lines	480 lines

* An IRE is a standardized unit of contrast.

CD AUDIO PERFORMANCE			
MAXIMUM OUTPUT	2 volts	1.9 volts	1.9 volts
FREQUENCY RESPONSE (20 Hz to 20 kHz)			
de-emphasis off	+0.01, -0.07 dB	+0.05, -0.33 dB	+0, -2.34 dB
de-emphasis on	±0.04 dB	+0.05, -0.32 dB	+8.31, -2.73 dB
NOISE LEVEL (A-wtd, dithered test signal)			
normal (de-emphasis off)	-95.4 dB	-93.6 dB	-89.3 dB
EXCESS NOISE (without signal)			
16-bit (EN16)	+0.25 dB	+2.18 dB	+5.25 dB
DISTORTION (THD+N, 1 kHz)			
at 0 dBFS**	0.0033%	0.0045%	0.0057%
at -20 dBFS**	0.013%	0.023%	0.039%
LINEARITY ERROR at -90 dBFS**	<+0.1 dB	<+0.3 dB	<+0.2 dB
DEFECT TRACKING (Pierre Verany test disc)	1,500 µm	1,250 µm	750 µm

** decibels referred to digital full scale

All three players did very well with most video tests, particularly when it came to color performance. The JVC had the worst (most rolled-off) luminance frequency response we have seen from a DVD player, and it was visibly less sharp with test patterns than the other two. But this effect was only rarely visible with normal movie program material. The picture still appeared sharper than laserdisc.

Far more visible was the effect of the 0-IRE setup level used by the JVC and Samsung players. This means that the player puts out a 0-volt video signal when reproducing pure black. Standard

studio practice, however, would require a +7.5-IRE setup level (black = 53.5 millivolts) for correct reproduction of movies. With a monitor adjusted for +7.5-IRE black, a player with 0-IRE setup level might produce a temporary feeling of greater contrast until you notice that very dark details are getting pushed into black. This result was very clear with a stairstep grayscale test pattern. The JVC's +5-IRE maximum-white-level error (its full-white level was 5 IRE too high) can also produce the impression of increased contrast on some monitors; on others it may produce "blooming" of highlights.

The audio results (measured from each player's analog outputs) are mostly self-explanatory. Note the exceedingly good excess-noise level of the JVC, a player that, on the whole, and in contrast to its video performance, had the best audio behavior of the three. The Samsung's de-emphasis-off frequency response with CDs shows the results of its low-bass rolloff (below 40 Hz). The de-emphasis-on response shows what happens when a player like the Samsung doesn't "do" de-emphasis. The result will be a rising high end with a few older CD titles (mostly classical).

—David Ranada

novel features have receded to relative insignificance.

THE RESULTS of our comparison did nothing to revise my initial impression of the DVD format: It's way cooler than even we jaded journalists expected. Video performance from all three decks was not far short of brilliant. Indeed, there was little if anything to

distinguish them — and only a comparative frame of reference in which to judge.

The main characteristics, then, on which these DVD players will be bought and sold, are ergonomics, features, and value. There were obvious shadings of ease, intuitiveness, and quality, but it's important to note that these are the most subjective of areas,

and my judgments can only provide a second opinion to your own. The JVC led the field in audio performance, and — in my subjective view — video as well, while the Philips had the edge in value, and the Samsung in features, plus the added filip of onboard Dolby Digital. But, overall, I would cheerfully retain any of these three DVD players for daily use. □

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—D.B. Keele, Jr. on the new Celestion A3, *Audio* August 1997

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hi-fi VCRS

Still taping after all these years

Don't think that the VCR represents old, moldy technology. There are plenty of high-tech features in the latest models.

By J. M. Barry

Although the VCR led a video revolution, it seems to be the Rodney Dangerfield of the electronics world, never getting its due respect. Even though it has played a key role in transforming American society and business over the last two decades, the videocassette recorder often gets the most publicity for the least of its accomplishments — the ability to record pratfalls and other “funniest” events. And it's been dissed relentlessly as that unfathomable appliance with the flashing “12:00.” Nevertheless, we've purchased more than 175 million VCRs since the Beta-max arrived on the scene during President Ford's administration. And sales

this year are on the way to surpassing last year's record of more than 14 million units.

The latest pretender to the VCR's position as the dominant home video format is the DVD player. Everywhere today, amid the promotion for DVD, the question inevitably arises, “Does DVD mean that VHS is finished?” In a word, no — at least not any time soon. For one thing, DVD is not a recordable format, not yet anyway, and it probably won't be for at least a couple of years. The VCR has become an integral part of most American's lives dur-



Sanyo's four-head VHR-H647 offers auto clock setting and a commercial-skip feature. A universal remote is included.

ing the last two decades, now showing movies and recording soap operas in nine out of ten homes. And for all the promises of new digital formats including DVD, the stalwart VHS VCR is bound to be around for a good long time to come.

If you're in the market for a new VCR and haven't been in an electronics store recently, you're in for a pleasant surprise, especially if you're looking to replace a clunky dinosaur. There's plenty of good news even if, at first glance, the latest models don't look all that different from their predecessors.

Look more closely. New VCRs offer more convenience features and superior picture quality, and they can be integrated more easily with other devices than past models. Yet prices continue to fall. The average retail price of VCRs has plummeted to less than \$300. Perhaps even more illustrative of how far



Zenith's four-head VR4277HF (\$350) features VCR Plus+, automatic clock set, an automatic head cleaner, and convenient A/V inputs on the front panel. It will maintain its memory settings for up to 10 minutes in the event of a power failure. A 30-second commercial-bypass feature is available on the remote.



Sony's SLV-960HF (\$550) has four heads and can be programmed to record up to eight events a month. It features a high-speed rapid-access tape transport and variable-speed play in both forward and reverse directions. An auto-preset tuner simplifies installation.



The Sharp VC-H976U (\$330) has four 19-micron video heads for improved performance in extended-play (EP) mode. It features eight-event/one-year programming and automatic clock setting, and its rewind function operates at 180X normal speed. A universal remote control is included.



The JVC HR-S5300U five-head S-VHS VCR (\$800) offers insert editing, random-assemble editing, and audio dubbing. It is equipped with a multibrand TV/cable-box/DSS remote control, and its memory can survive a 60-minute power failure. Its horizontal resolution is rated at 400 lines.

prices have fallen is that the most expensive VHS model in Hitachi's current line carries a suggested retail price of \$349, while RCA's top-of-the-line model is just \$399.

Of course, you can still buy a two-head or four-head mono VCR these days for not much more than \$100, but there hardly seems any point in doing so unless you're really strapped for cash or only tape TV shows to watch on a 19-inch tabletop set. With four-head hi-fi VCRs starting at a suggested retail price of \$179, for the Fisher FVH-T607, hi-fi models now make up nearly half of all VCR sales. They give the purchaser one of the key components required to assemble a home theater. Just add a surround-sound processor and four or more loudspeakers along with a 27-inch TV, and you'll have a home theater that will deliver the kind of big, enveloping sound that can make movies come to life in your living room.

Fast becoming a standard feature on all but the lowest-price models is automatic clock set, which puts an end to the jokes about the flashing "12:00." These VCRs automatically set their clocks using signals embedded in TV broadcasts, and they even adjust for daylight saving time.

As part of an effort to simplify VCR operations, JVC — the company that invented the VHS format — has borrowed terminology from the computer realm for its newly expanded Plug & Play system. Plug & Play was first introduced a year ago in some JVC recorders and is now found throughout the company's hi-fi VCR lineup. The HR-A63 (\$269), for example, not only sets the clock but automatically scans, stores, and numbers the available channels when the user hooks up the antenna and plugs in the VCR. It also has a multibrand TV/cable-box remote control and multilingual color on-screen menus.

JVC is also promoting a new technology for noiseless search and time-saving playback that it calls the Dynamic Drum System with TimeScan. This features automatically inclines the tape drum so that the heads track accurately without overlap regardless of the playback speed and direction. TimeScan is said to provide noise-free forward and reverse search at up to seven times normal speed. The system is available beginning in the HR-DD740 (\$449), which also has JVC's insert-editing system using a flying erase head and another increasingly

popular feature, an Lumi-Guide lighted remote control. Remotes that backlight some or all of their buttons are especially useful in dimly lit home theaters or for lights-out, late-night bedroom viewing.

One of the other most popular features added in recent years is Commercial Advance, which gives a VCR the ability to skip past commercials when you play back a newly recorded television program. That feature has been refined, too. Four new RCA hi-fi models include "enhanced" Commercial Advance, which allows you to skip commercials automatically on tapes you have previously recorded. Some of us enjoy watching the old commercials along with the old programs, but if you don't, you can just pop your old *M.A.S.H.* or *Hill Street Blues* tapes into the new VCR, select Commercial Advance from the on-screen menu and play the tape. The VCR will automatically mark commercials so that they'll be skipped when the tape is replayed. The viewer will see a few seconds of blue screen instead of a couple of minutes of advertising.

RCA and Hitachi have also added a variation on that theme for those of us who rent a lot of videos but are growing weary of the many previews and advertisements that precede the features. Movie Advance, as RCA calls it, or Movie Pass, as Hitachi dubs it, automatically takes you to the opening of the film, skipping over the promotional shorts. When you insert a pre-recorded cassette and press a button on the remote, the VCR searches for the end of the previews (actually, it searches for more than 3 minutes of uninterrupted video, then winds back to its beginning), cues up the beginning of the movie, and activates an on-screen display letting you know the feature is about to begin. RCA offers Movie Advance and Commercial Advance on three stereo hi-fi models, starting with the VR643HF (\$349), and on a four-head mono model.

The VCR's growth parallels the proliferation of cable-TV programming. For years, however, getting the two entertainment-delivery systems to interact smoothly too often presented a hair-raising — or hair-pulling — puzzle. But recent developments like VCR Plus, which was created to simplify basic VCR programming, make the interaction with cable and other set-top boxes a good deal easier. The vast majority of hi-fi VCRs now have VCR



The Mitsubishi four-head HS-U680 (\$579) features VCR Plus Gold with cable-box and DSS-receiver control. An S-VHS Quasi-Play feature allows you to watch S-VHS tapes, though not at S-VHS resolution. It has a rapid-start transport with a 250X fast-wind speed and a 2X mode with sound.



RCA's four-head VR691HF (\$399) features VCR Plus, Commercial Advance, automatic clock set, and blank-tape search. It also offers high-speed rewind, a quick-start mechanism, and a back-lit universal remote control. Parents can engage a child-lock feature to prevent unsupervised operation.



Panasonic's four-head PV-4662 (\$549) includes Spatializer audio processing to create a surround-sound effect from only two speakers. It also offers VCR Plus with cable-box control, automatic clock setting, and front-panel A/V inputs. Digital Auto Picture control is said to improve the picture quality from worn tapes.



Samsung's four-head VR8707 (\$229) has a base-level feature set including a 181-channel VHF/UHF/CATV tuner. It features a 2-minute tape-rewind time, records at either SP or SLP speed, and can play back tapes recorded at those speeds as well as those recorded in LP mode.



Toshiba's four-head M-683 (\$300) features an MT5/SAP decoder with dbx noise reduction, a center-load mechanism, one-touch recording, and 150X high-speed fast-forward and rewind. It also has VCR Plus with cable-box control. Multilingual on-screen prompts simplify programming.

Plus with cable-box control, the advanced version of the programming system that can turn on your cable box, set it to the right channel, *and* make sure that the VCR's input is set properly when you enter the VCR Plus code numbers printed in newspaper and magazine TV listings.

Many of the newer models add Digital Satellite System (DSS) controls to the system. And Gemstar, the company that developed VCR Plus, has now added VCR Plus Gold, which automatically maps and labels your channels and sets the clock when you enter your zip code into the system. This enhanced VCR Plus system is included in the Mitsubishi HS-U580 (\$499), which also has a lot of other picture-quality and convenience features.

StarSight, an on-screen guide that greatly simplifies recording and chan-

nel surfing, is available on half a dozen brands of hi-fi VCRs, including the Samsung VR-8907 (\$399) and the Sony SLV-980 HF (\$499). StarSight, now also owned by Gemstar, displays seven days of up-to-date program schedules and allows one-touch program selection for a monthly fee of less than \$5. It also enables the user to sort programs by type (movies, kids, or sports, for example) for quick access. The Sony SLV-980 HF is part of its new LS series, which features Smart Set-Up, an on-screen menu system that guides users through the setup procedure to select a language, set DSS or cable-box controls and tuner presets, and automatically enter VCR Plus channels for programming and recall.

VCRs are also participating in one of the other continuing trends in consumer electronics, the combination of

several components into one chassis. Small-screen TV/VCR combinations have been a staple in conference rooms for a decade or more, but now they're become a real option for those of us looking for simplicity and space savings at home. Toshiba, for instance, offers 27-inch (CV27G68) and 32-inch (CV32G68) TVs with premium picture tubes, built-in stereo hi-fi VCRs, two-tuner PIP (picture-in-a-picture), and A/V inputs at \$1,049 and \$1,699, respectively.

But now VCRs are becoming incorporated into other components, too. Sony and Aiwa each offer a combination VCR and A/V receiver. At \$699, Sony's Power Cinema SLV-AV100 mates a four-head stereo hi-fi VCR with VCR Plus programming and an A/V receiver that delivers 75 watts per channel to the front left and right speakers and 50 watts each to the surround and center speakers.

Meanwhile, JVC combines a new D-VHS VCR with an Echostar DISH Network satellite receiver in the HM-DSR100DU (\$999) to facilitate taping the high-quality digital pictures delivered by satellite (see "Digital Is Here" below).

Recording the best picture with a nondigital recorder means Super VHS (S-VHS). The category starts at around \$500, but most buyers opt for lots of additional features for high-quality

Digital Is Here. Is That Clear?

MANY PEOPLE HAVE assumed that the coming of the digital era would eliminate the format wars and overcome the compatibility challenges that have dogged home video since the early days of the Beta vs. VHS slugfest. But the road to the digital future, at least in digital videotape, has proven far from smooth to date, leaving many potential buyers and even some industry mavens scratching their heads.

The new DV (digital video-cassette) format, introduced last year in camcorders

starting at about \$2,000 from a handful of manufacturers, including Sony, JVC, and Sharp, uses a tiny 30- or 60-



The Hitachi VTDX-815A D-VHS VCR allows owners of compatible DSS receivers to tape satellite delivered programming at the resolution at which it's broadcast because the digital bit-stream is stored directly on tape. The VCR is also fully compatible with VHS tapes.

minute cassette that looks almost identical to a digital audio tape (DAT). To date only Sony has brought out a home VCR in this format, the DHR-1000 (\$4,199). This machine will interface smoothly with computers and DV camcorders with virtually no loss of picture quality when dubbing or editing sessions take place in the digital domain.

What's causing confusion, however, is another format, D-VHS, especially in recent months because of the introduction of combination D-VHS/DBS (direct broadcast

satellite) components. D-VHS — in this case the "D" stands for "data," not "digital" — is a JVC-developed standard that modifies an S-VHS tape to record and play a bitstream from a digital source. Hitachi's new VTDX-815A (\$599) is designed to record from a direct digital connection to a DSS receiver equipped with a compatible output port. When played back, the bitstream is fed to the receiver, where it is decoded just as the DBS broadcast would have been. The D-VHS format can deliver more than 500 lines of resolu-

editing and playback. JVC's top-of-the-line S-VHS HR-S9400 (\$1,199) includes digital circuitry to provide truer colors, reduce jitter, and generally optimize audio and video signals. It also has a multibrand TV/cable/DSS remote control with jog-shuttle dial and a J-terminal for integration with a Windows PC to create a computer-controlled multimedia system.

Meanwhile, standard VHS machines have been upgrading picture quality steadily over the past several years. Center-mounted chassis with fewer moving parts can be found across most lines, while advances in video heads have become commonplace in hi-fi VCRs from just about all manufacturers. Panasonic uses special metal heads with a laminated design that is said to reduce tape-contact noise. In the PV-7664 (\$399) the so-called DynAmorphous heads work with noise-reduction circuits to achieve a 40-percent increase in video signal-to-noise ratio. The same model also features a Video Head Sensor System that detects when heads are clogged by oxide debris from worn tapes, a common occurrence for those of us who rent a lot of videos.

A few years back Sharp pioneered 19-micron high-precision video heads, which are about 25 percent narrower than standard video heads and thus minimize crosstalk and noise during

extended-play mode. This feature, now available on all Sharp VCRs as well as those from a half dozen other companies, is particularly valuable if you tape a lot of long programs in EP mode or simply want to maximize your blank-tape investment and get more programs onto a limited number of tapes.

Toshiba uses two additional 19-micron heads in conjunction with a "flying pre-amp" to deliver clearer pictures in standard and EP modes in its six-head, hi-fi VCRs, including the M752 (\$399) and the M782 (\$599). The latter adds digital noise-reduction and color-enhancement circuits to improve sharpness and reduce color bleed and overlap.

If you're seeking even more convenience and flexibility in your next video recorder, or if dubbing tapes is a frequent activity, you can choose among dual-deck VCRs like those offered by Go-Video at prices ranging from about \$400 to \$800. The hottest items from Go-Video are its stacked dual-deck VCRs, introduced last year, that fit the same width as other A/V equipment in a rack. The GV-6060 (\$699) is a stacked four-head model that records and plays back in stereo hi-fi on both decks.

Thanks to concern about the potential for widespread computer snafus when calendars turn to the year 2000,

questions have been raised about the programmability of VCRs as we approach the millennium. But VCR makers say, "Not to worry." In the past few years, they've updated their timers to use four digits rather than two to represent the year, so the machines will move ahead from 1999 to 2000 without a hitch. Some manufacturers reprogrammed VCR clocks as early as 1992. And even if your VCR was made earlier, you need not fret because older models have only 30-day timers, rendering them oblivious to a change of year.

Finally, there's good news and bad news for die-hard Betaphiles. Sony continues to make Beta VCRs — that's the good news. But it's going to be harder than ever to find one because the lineup has dwindled to a single model, the SL-HF2000 (\$899), a SuperBeta Hi-fi VCR with on-screen programming, 1-hour timer backup, and a Control-S input for use with Sony editing consoles.

So if your video recorder is starting to show its age, scope out the latest VCRs. Although they may no longer offer the most glamorous technology on the block, trusty analog VCRs have proven themselves to be remarkably adaptable and resilient. Without question, a new model purchased today will provide viewing pleasure well into the coming digital video era. □

tion and 5 hours of recording time. RCA, the leader in DSS component sales, has also promised a D-VHS machine in the \$500 price range "sometime soon."

Confusing the issue, however, is JVC's introduction of a D-VHS VCR combined with an EchoStar DISH Network satellite receiver, the HM-DSR100DU (\$999). Like Hitachi's VTDX-815A, this recorder will record and play back in analog VHS mode as well as capturing a satellite-broadcast digital bitstream. But it won't record or play back on tapes from a DSS-compatible VCR like the Hitachi model. This isn't much of a surprise.

After all, a DISH Network receiver can't decode DSS signals so you shouldn't expect the DISH Network tuner to be able to decode a DSS bistream from a D-VHS tape. The incompatibility works both ways, of course. A DSS receiver cannot decode a DISH Network bitstream.

JVC hasn't indicated when the company will introduce a stand-alone D-VHS unit, but in the short term, as D-VHS becomes embroiled in the DBS turf war, it would be wise to ascertain up front exactly what a new D-VHS machine can record and play back and what it cannot.

JVC has announced that

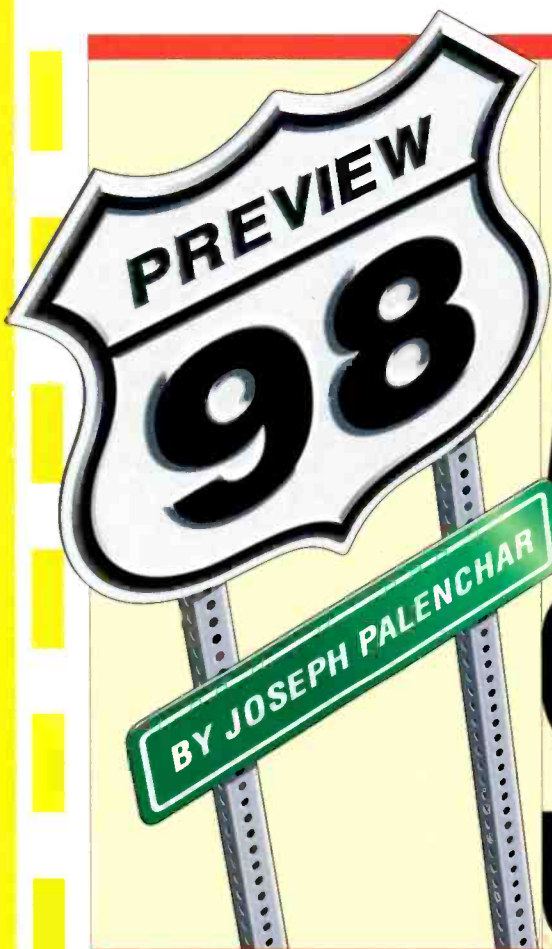
it is developing an IEEE 1394 (FireWire) adaptor for transferring data to or from a PC. A D-VHS cassette has a data capacity of 44.4 gigabytes, and a main data input rate of 14.1 megabits per second (Mbps).

In any event, it seems possible that D-VHS and DV, even with their prodigious data-storage capacity, will

The JVC HM-DSR100DU D-VHS digital video recorder (\$999) is a full-function VHS deck with the added ability to record a digital MPEG-2 bitstream from a built-in EchoStar DISH Network satellite-TV receiver. The deck is backward-compatible with analog VHS.

be relatively short-term formats, interim steps in the rapidly accelerating transition to more rugged and versatile optical discs like recordable DVD, which loom on the horizon. — J.M.B.





AUTO SOUND

AUTOMAKERS REV IT UP WITH HIGH-PERFORMANCE AUDIO OPTIONS

HIGH-OCTANE car stereo systems are just the thing if your passion for music drives you to the limit. They keep the music firing on all cylinders, and judging by the number of factory systems that are available in the new 1998 vehicles, you can fill up with premium-grade sound at almost any new-car dealer.

If you're shopping for a new car, you'll find CD players or changers offered as standard equipment in dozens of car models, some of which include a CD changer conveniently located in the passenger compartment instead of in the trunk. Automakers are also equipping more vehicles than ever before with sophisticated systems that

compensate for wind and road noise by automatically boosting volume as speed increases.

In its 1998 lineup, BMW takes the concept of speed-compensated volume control to the next level in its 318i and 328i convertibles, which offer optional systems that automatically adjust equalization as well as volume accord-

Delco's EyeCue display, which is standard in the 1998 Pontiac Bonneville SSE, projects vehicle and audio-system information, such as the car's speed and the tuned radio frequency, onto the windshield in front of the driver.





The ten-speaker Monsoon system, which includes a CD player, a seven-band equalizer, and two 6-inch woofers, is available as a factory option in the Pontiac Firebird Trans Am.



ing to speed. In a further refinement, Bose systems offered in two versions of the Cadillac Seville automatically adjust volume and equalization according to noise levels monitored by a passenger-compartment microphone.

Surround-sound fans may want to check out two Volvo models that offer Dolby Pro Logic surround decoding as an option, and convenience-minded motorists will be interested in knowing that Radio Data System (RDS) radios are now available as standard equipment or options in more than two dozen car models. An RDS-equipped tuner displays the call letters and program formats of FM stations broadcasting an inaudible RDS data signal. It can also search for stations by music format and automatically interrupt cassette or CD playback when an RDS station broadcasts traffic or emergency reports. About 700 of the nation's 7,300 FM stations are currently broadcasting RDS signals.

These aren't the only audio advances in store for new-car shoppers this fall. If music is important to you, keep reading to find out what the automakers have in store for music-minded motorists. Power ratings are continuous and for all channels combined unless otherwise noted. Prices are given if they were available.

AUDI

The A4 Avant sport wagon debuts with a standard eight-speaker, 120-watt (peak) Concert system with a cassette

receiver that includes a CD changer-controller, an RDS tuner, and Graduated Audio Level Adjustment (GALA), which raises volume as speed increases. RDS and GALA continue as standard features in all other Audis for the second consecutive year. A six-disc cargo-area changer is available as a dealer-installed option with the Concert system and with an optional 150-watt, seven-speaker Bose system.

As it was last year, a Bose system is optional in all vehicles except the flagship A8 4.2 sedan, where Bose is standard. In the A4 sedans, the Bose options have been upgraded to 150 watts from 100 watts.

In another change, the A6 luxury touring sedan becomes Audi's first vehicle equipped with a subwoofer system as standard equipment. Two 4½-inch drivers share a trunk-mounted enclosure in the A6's standard 140-watt (peak) ten-speaker Concert system.

BMW

A biamplified Harman Kardon system is available in the 318i and 328i convertibles for the first time. The eleven-speaker 28-watt x 8 factory-installed option boasts a speed-compensated volume control, twenty bands

of parametric equalization to tailor response to the car's interior, and dynamic equalization that changes according to vehicle speed to compensate for the bass-masking effects of road and tire noise. System equalization also changes automatically, primarily in the bass and mid-bass regions, when the top goes up. A six-disc trunk-mounted CD changer is dealer-installed but included as part of the system's estimated price of about \$1,000. A similar Harman Kardon system with speed-compensated volume and equalization was introduced last year as a standard feature in the Z32.8 two-seat roadster and as a factory option in the Z31.9 roadster, and it carries over into the 1998 models.

BUICK

With the introduction of the Park Avenue's first-ever single-chassis CD/cassette player option, dual-format head units are available as factory options in all Buick models except the Riviera, where it's still standard. The head units control optional six- and twelve-disc trunk-mounted CD changers that can be installed by the dealer.

Steering-wheel-mounted audio con-



The 375-watt Base 4.0 system that's standard in the Cadillac Seville STS adjusts volume and EQ automatically for ambient-noise conditions as measured by a passenger-compartment microphone.

Ford is offering its first RDS-capable head units, all changer-controlling cassette decks, in nine vehicles, including both the Mercury Lincoln Continental (below) and Town Car. In the Lincolns, the systems also incorporate digital signal processing.



controls continue as an option on all Buicks except the Park Avenue Ultra, where they're standard.

CADILLAC

Big changes are in store for Cadillac connoisseurs. Weather-band reception and RDS debut in eight Cadillac models. In seven models they're part of either the factory-installed Active Audio System or the Bose system options. In the Seville STS, they're part of the standard Bose system.

Cadillac's first dual-format CD/cassette players are standard on all but the Catera, DeVille, and Eldorado, which include cassette radios as standard equipment.

A boastful Bose is talking up its new 375-watt 4.0 system, which is standard in the Seville STS and a factory option in the Seville SLS. Bose contends that the 4.0 is its best factory system, delivering deeper bass and greater accuracy at high volumes. The driver complement includes a trio of dash-mounted 2-inch drivers firing up at the windshield, an 8-inch woofer in each front door, a 6½-inch wide-range driver in each rear door, and a 12-inch package-shelf woofer powered by a dedicated 100-watt amp.

The 4.0 system also distinguishes itself as Bose's first system to adjust volume and equalization automatically according to the ambient-noise conditions as monitored continuously by a microphone installed in the passenger compartment. Bose uses proprietary algorithms to sample the noise digitally, separate it from the music, and boost

or cut frequencies as needed throughout the audible range. The company reasons that this technique yields superior results compared with systems that boost volume as speed increases because wind and road noise vary not only according to speed but also road surfaces and the proximity of other noise generators such as passing tractor trailers.

Seville owners also get the opportunity to buy Cadillac's first passenger-compartment CD changer, a factory- or dealer-installed six-disc option to be mounted in the console storage compartment between the front seats. It's controlled from the Seville's stan-

standard CD/cassette head unit. All Cadillac heads control changers, which in models other than the Seville are twelve-disc trunk-mounted dealer-installed options. In 1998, Cadillac simplified its radio antitheft feature. As in previous models, the radio locks up when power is cut, but to reactivate the radio, users need not enter a numeric code. Instead, because the feature is tied to an individual car's VIN (vehicle identification number), the radio reactivates automatically only when it's reconnected to the car into which it was originally installed — but it won't operate if connected to any other vehicle, even another 1998 Cadillac. The radio can also be traced to its owner if stolen because it stores the VIN in memory.

CHEVROLET

The GM division continues to offer factory-installed CD receiver options in all of its vehicles, but for the first time Chevy offers a companion slave cassette deck. A \$200 factory-installed option in the Blazer LS and LT and a \$402 option in the compact S-10 pickup, the cassette deck drops into the floor console centered below the dash.

Speed-compensated volume control is available in the S-10 and Blazers for the first time when the vehicles are equipped with the CD receivers or with select factory-installed cassette options. The feature is still available in the Malibu LS's standard system and in select options packages for the Lumina and Malibu sedans and the Monte Carlo.



A CD/cassette player with six speakers (\$270) or a 130-watt Bose system with eight speakers (\$500) are two factory-installed options available for Oldsmobile's new Intrigue sports sedan.

CHRYSLER/ DODGE/ PLYMOUTH

More CD choices are in store this year from the three sister brands. On all trim levels of the Chrysler Concorde and Dodge Intrepid, for example, in-dash CD receivers are factory options in 1998 for the first time, in some cases as part of standard or optional custom-equalized Infinity 240-watt (peak) systems. In both cars, dual-format CD/cassette players and cassette decks are still available in select stan-

dard and optional systems. An optional dealer-installed trunk-mounted six-disc changer can be controlled from the CD receivers and select cassette decks, but not from the dual-format CD/cassette head units.

A new Jeep Grand Cherokee model, the top-end 5.9 Limited, debuts in 1998 with a standard Infinity Gold system built around a dual-format head unit that lacks CD changer controls. Highlights include the 180-watt (peak) amplifier, custom equalization, ten drivers, and steering-wheel-mounted audio controls, which are optional in other Grand Cherokee models. Speakers include two instrument-panel tweeters, two woofers in the front doors, two woofers in the rear doors, and two tweeters and two midrange drivers in the cargo-area headliner.

CD/cassette head units are available as factory options or standard equipment in all models from all three company divisions except the Plymouth Neon and two-seat Prowler convertible and the Chrysler Cirrus, Dodge Stratus, and Plymouth Breeze compacts. None of the dual-format heads control a CD changer, and a dealer-installed changer with RF modulator will no longer be offered.

In the Cirrus, Stratus, and Breeze,

The two-seat convertible's seven-speaker system delivers 320 watts (peak) and features fixed bass and mid-bass equalization tailored for top-down, 60-mph driving. Remote audio controls on the back side of the steering-wheel spokes let you change stations, CD tracks, and volume levels. The Prowler's cassette head unit controls a six-disc changer, which is mounted behind the passenger seat below the ported, bandpass enclosure housing a 6½-inch dual-voice-coil woofer.

FORD/LINCOLN/MERCURY

Speed-compensated volume controls and RDS turn up for the first time in select models, but those aren't the only significant changes in store for the new model year.

For the first time, a slave CD player and companion cassette deck are standard in all Mustangs, whose slave CD players were previously optional. Also, premium Mach sound systems will be available as a

\$650 to \$800 option for the first time in the Ford Explorer and as a \$475 option in the Mercury Mountaineer sport utility vehicles (SUVs), joining the Ford Mustang and Taurus and the Mercury Sable and Expedition.

The 145-watt, seven-speaker Mach systems in the Explorer and Mountaineer boast a dual-format CD/cassette player and an 8-inch subwoofer behind a trim panel in the right rear cargo area. Same as last year, an optional \$370 factory/dealer-installed six-disc CD changer controlled from the head unit goes under the center-console armrest.



For the first time, Chevy is offering a slave cassette deck that can drop into the floor console centered below the vehicle's dash as a \$200 factory-installed option in the Blazer LS (above) and LT.



Plymouth's new retro-style Prowler roadster comes with a seven-speaker Infinity sound system that features fixed EQ for top-down driving, steering-wheel audio controls, and a cassette head unit that controls a six-disc CD changer.

and the Chrysler Sebring convertible, a six-disc console-mounted CD changer has been carried over in conjunction with various changer-controlling cassette options. The changer, installed at the factory or by the dealer, sits below other instrument-panel controls.

At Plymouth, the retro-style Prowler roadster debuts with a standard high-performance Infinity sound system.





Ford is offering speed-compensated volume control as a \$370 factory option for the CD/cassette head unit in the Ford Ranger XLT pickup (top) and as a factory or dealer option for the Mach CD/cassette sound systems in the Explorer and Mountaineer sport utility vehicles (SUVs).

With the Mach introductions, the Explorer and Mountaineer become the first vehicles in the automaker's three divisions to offer a "dual-playback" feature that lets back-seat occupants listen to one source through headphones while everyone else listens to another source through the speakers. A control panel on the back of the center console features two headphone jacks and remote audio controls, including volume, source selection, tuning, tape direction, and CD track selection.

In another change, Ford is introducing its first speed-compensated volume controls in the new Mach systems, the dual-format head unit available in the Ford Ranger pickup as a \$370 factory option, and the new CD changer-controlling cassette players offered as factory or dealer options in the Lincoln Continental and the Lincoln Town Car.

The automaker's first RDS head units, all changer-controlling cassettes, will be available in nine vehicles, although it hadn't been determined at press time whether the radio would be part of standard or optional systems. The nine models are the Lincoln Continental and Town Car, Mercury's Grand Marquis and Mountaineer, and Ford's Crown Victoria, Econoline van, Club wagon, Explorer, and Ranger pickup.

In the Continental and Town Car, the RDS radios will also incorporate

digital signal processing, previously used by the company to replicate the acoustics of different listening venues but now expanded to optimize imaging through digital equalization and the time alignment of the left and right speakers. Imaging can be optimized for the driver, all occupants, or all rear-seat occupants.

In other changes, Ford adds steering-wheel controls to the Explorer for the first time, but it hadn't been decided at press time whether they would be standard or optional. In the new Lincoln Navigator, they're standard. In 1997, steering-wheel controls were optional in the Lincoln Continental and standard in the Mercury Villager minivan and Lincoln Town Car Signature series. They're still available in those vehicles in 1998, but it

was still undetermined at press time whether they were to be standard or optional.

Also for the first time, the Navigator joins six other vehicles in offering passenger-compartment six-disc CD changers in the center console, either between the front seats or near the instrument panel. The other vehicles are the Ford Explorer and Expedition SUVs, the Mercury Mountaineer SUV, the Lincoln Continental, and the Mercury Villager and Ford Windstar vans. In 1997, the changers were options, but it wasn't certain whether the changers would be standard or optional in 1998.

GMC

Bose's first-ever GMC systems will be standard in the full-size Denali and compact Envoy sport utility vehicles due later in the 1998 model year. The custom-equalized system features a cassette head unit in the dash that controls a six-disc CD changer in the console between the front seats. The 190-watt Denali system includes a 4 x 6-inch woofer in a 1/3-cubic-foot enclosure that's also built into the center console.

The Envoy system is rated at 260 watts.

HONDA/ACURA

Steering-wheel-mounted audio controls are available for the first time in the Acura 2.3CL and 3.0CL, where they're standard. Same as last year, a CD receiver and six speakers are also standard in these vehicles, and an in-dash slave cassette and a six-disc trunk CD changer are still dealer options.

Acura's 3.5RL joins the 3.5RL Premium in offering a standard eight-speaker 200-watt Bose system with a CD changer-controlling cassette player. In the RL, a six-disc changer can be installed in the trunk or center armrest by a dealer. In the RL Premium, the changer is standard in the trunk but a dealer can reinstall it in the console. Both cars continue to offer standard steering-wheel-mounted audio controls.

In the Honda division, the CRV EX sport utility vehicle gets its first standard-equipment CD receiver, joining the Prelude coupe and the Accord EX four- and six-cylinder sedans.

JAGUAR

Standard steering-wheel-mounted audio controls, available since 1997 on the XK8 sports car, will now be avail-



The standard head unit in the Volvo V70 R combines a tuner, a cassette deck, and a three-disc CD changer in a single in-dash chassis, with Dolby Pro Logic surround decoding a \$595 factory option.



Built to rock.

The culmination of the latest advances in high technology, revolutionary design, the finest materials, perfect balance, and a dedication to the most refined sense of taste.

Price, \$1,799



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A factory option in the new Mercedes ML320 sport utility vehicle is a seven-driver, 150-watt Bose system with a cassette deck that controls a six-disc CD changer mounted in the cargo area.

able in the XJR, XJG, XJGL, and Vanden Plas sedans. In all Jaguars, a new standard-equipment cassette radio features RDS reception and provides a duplicate dialing keypad for an optional voice-activated phone. A bi-amplified 240-watt Harman Kardon system with a six-disc trunk CD changer continues as a factory-installed option for all models but the XJR, where it's standard. The price is expected to remain about \$1,800.

MAZDA

More standard-equipment in-dash CD players and Bose systems are in store for Mazda mavens. In 1997, in-dash CD was standard only in the Millenia S as part of a dual-format CD/cassette player. In 1998, the SE-5 Plus pickup also gets a standard dual-format head unit, and all trim levels in the 626 line beyond the basic DX get their first standard CD receivers.

Four speakers accompany the SE-5 and 626 head units. Dealer-installed 626 options include an in-dash cassette player under the CD receiver and a trunk-mounted six-disc CD changer. The SE-5 head unit can also control a dealer-installed six-disc changer.

Mazda makes RDS available for the first time in the SE-5 Plus's standard head unit. In 1998, Bose systems are

available for the first time on 626 series models, as standard equipment in the ES and as factory options on the LX and LX V6, all with CD receivers mounted in the dash.

MERCEDES

A bi-amplified 150-watt Bose system is a factory option in the ML320, the German automaker's first sport utility vehicle in the U.S. market. For less than \$1,200, the seven-speaker system includes a sub-woofer amplifier that delivers 50 watts to a 5¼-inch, dual-voice-coil woofer mounted in an enclosure under the driver's seat. There are 6½-inch coaxials in the front doors and a wide-range 5¼-inch speaker in each rear door. The system's program sources are a changer-controlling cassette and a cargo-area six-disc CD changer. Like all previous Mercedes systems, the ML320 features speed-compensated volume control. Bose systems continue to be standard or optional in all other Mercedes vehicles.

MITSUBISHI

The Mirage LS coupe, but not the sedan, gets its first standard-equipment CD receiver, joining the entry-level Montero Sport ES SUV. The head unit doesn't control optional changers or cassette players.

Dual-format CD/cassette players are carried over in the Eclipse GS-T and GSX and the Diamante LS as part of standard Infinity sound systems. The Eclipse head units incorporate CD changer controls.

NISSAN/INFINITI

More Nissans will have in-dash CD as standard equipment in the 1998 model year. CD receivers are now standard in the 200SX SE and SE-R sports cars, and a CD/cassette player is standard in the Sentra GLE sedan, all Altima models but the SE, the Pathfinder XE, LE, and SE SUVs, the Frontier SE King Cab truck and SE King Cab 4WD, and the

Maxima SE and GLE. In all but the 200SX SE and the two Frontiers, an optional \$669 dealer- or port-installed six-disc CD changer controlled by the head unit is available.

The standard CD receivers and dual-format heads replace standard cassette units, which in most cases controlled an optional dealer- or port-installed CD changer, including a three-disc in-dash changer that's still available in some Nissans.

Bose systems continue as standard equipment in all Infiniti models.

OLDSMOBILE

Two new nameplates, the Intrigue and Intrigue GL, debut with a standard cassette deck, a \$270 factory-installed CD/cassette player option with six speakers, and a \$500 factory-installed 130-watt Bose option, which comes with eight speakers and a CD/cassette player. The GL also features optional steering-wheel-mounted audio controls (\$125). Another \$460 factory option, a twelve-CD trunk-mounted changer, is controlled from the sport sedans' standard and optional head units.

Same as last year, a Bose option is available in the Aurora, and CD/cassette head units are available in all



The new standard-equipment cassette radio in all Jaguars, including the Vanden Plas sedan (above), features RDS reception and a duplicate dialing keypad for an optional voice-activated phone.

Oldsmobiles. They're standard in the Aurora, LSS, and Regency and optional in the rest.

PONTIAC

Delco's EyeCue "head-up" display, which projects vehicle and audio-system information onto the windshield in front of the driver, is standard rather than optional in the 1998 Bonneville SSE. It continues as an option on the Grand Prix. EyeCue displays radio-frequency and CD track information along with the vehicle speed and warning indicators, including a low-fuel icon.

The ten-speaker Monsoon system continues as a \$430 factory option only in the Firebird. The eight-channel system features active crossovers and two 6-inch dual-voice-coil subwoofers. Amplifier power output was not available.

Steering-wheel-mounted audio controls remain options on all Pontiacs but the Bonneville SSE, where they're standard.

SATURN

The sound systems are as practical and basic as the car itself. Factory-installed options include a cassette radio and a changer-controlling cassette unit with an equalizer and four 6-inch speakers. A CD receiver returns as a

factory option after a one-year absence, and a twelve-disc trunk-mounted CD changer is available as a dealer-installed option. Option prices range from \$290 to \$540 for the Saturn SL and \$260 to \$510 for all other models.

SUZUKI

With the addition of a dealer-installed CD changer option under the passenger seat in the Swift hatchback, six-disc CD changers are available in all Suzukis for the first time. In-dash CD players have been dropped from all models.

TOYOTA/LEXUS

The big news comes from Toyota's Lexus division. To the standard Pioneer systems in the LS and GS V-8, Lexus adds its first-ever automatic volume control, which uses digital signal processing to change volume automatically in concert with changes in interior noise levels as measured by a microphone mounted in the headliner. The feature is defeatable.

The cassette-based system is offered

with a factory-installed glovebox-mounted CD changer option, which is available in the GS for the first time. The Pioneer system is also standard in the Lexus ES but without automatic volume control.

Lexus will extend its brand-name collaboration with Nakamichi to the

changer (\$690) in the C70 trunk and V70 R cargo area.

The big news is that Dolby Pro Logic surround decoding is available as a factory-installed option in both vehicles — a first for automakers. The \$595 Pro Logic option adds the decoder, which mounts to the back of the



Standard in the Jeep Grand Cherokee 5.9 Limited is an Infinity Gold System comprising a CD/cassette head unit, a 180-watt amplifier, custom equalization, ten drivers, and steering-wheel audio controls.

ES series for the first time with a 215-watt (peak) biamplified system featuring an 8-inch rear-deck subwoofer, a pair of 1-inch dome tweeters near the side-view mirrors, and four 6½-inch drivers, two up front and two in the rear deck. The factory option features an in-dash cassette player, a glovebox-mounted six-disc CD changer, and fixed parametric equalization to tune the system's response to the car's interior. A 280-watt (peak) Lexus/Nakamichi option is already available in the LS and GS.

In Toyota vehicles, in-dash three-disc CD changers continue as options in almost all models.

VOLVO

In the C70 coupe and V70 R all-wheel-drive station wagon, the standard head unit is the automaker's first to combine a tuner, a three-disc CD changer, and a cassette player in a single in-dash chassis. The Alpine-made head unit is also Volvo's first U.S. radio with RDS, and it controls an optional dealer-installed six-disc CD

head unit, and a pair of center-channel drivers in the dash. More than 700 Dolby Surround-encoded CDs, mostly classical, are now available from a variety of labels, including Delos, BMG, and EMI.

The head unit also delivers speed-compensated volume control and diversity tuning, which Volvo is providing for the first time in every vehicle but the base SV70.

Whether you've got your heart set on a Jaguar XK8 or a Chevy Malibu, both U.S. and foreign automakers are offering more fine-sounding and user-friendly audio options to choose from than ever before. So start thinking about whether you prefer a CD player in the dash or a multidisc changer in the trunk or console. Just don't forget to bring a few of your favorite CDs along when you hit the dealer showrooms. If you play your cards right, you may even be able to get the salesman to throw in an audio option or two to seal the deal. □

NEW CHAPTERS FROM THE COMPANY THAT WROTE THE BOOK ON SUBWOOFERS

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KID PROOFING

HOW TO SAFEGUARD YOUR A/V EQUIPMENT FROM YOUR KIDS — AND YOUR KIDS FROM YOUR EQUIPMENT BY GORDON BROCKHOUSE

EVER SINCE MY BABY GIRL arrived two years ago, she's taken to my electronic toys like a duck to water. At first when she started crawling too close to my stuff, I'd chase after her, wailing "No-o-o, don't touch that!" Finally I got smart. My goal wasn't just to protect my toys from her but also to protect her from my toys.

You don't have to be a new parent to kidproof your equipment. Visits from grandkids, nephews, nieces, and friends' children will be a lot more relaxing if your audio/video gear is secure.

The most effective way to protect kids and electronic toys from each other is to get your components out of reach — and if possible out of sight. Your television and speakers will have to stay in your viewing/listening room, of course, but you may be able to house other components, such as amplifiers and CD players, in a enclosed space like a cabinet or closet. That is likely to involve running cables through walls, ceilings, or ductwork, and unless you're handy, you may want to enlist the aid of a dealer who specializes in custom installation.

So that you can control these components from your couch, you'll probably want to add an infrared (IR) repeating system, which consists of an IR receiver in the listening room wired to an IR emitter in the component closet. There are IR receivers that fit into wall-mounted junction boxes and others that can be flush-mounted onto bookshelves and cabinets. Infrared repeaters are available from Niles Audio (800-289-4434), Xantech (318-362-0353), and others; expect to pay between \$100 and \$200.

Recoton (800-732-6866) has a radio-frequency (RF) universal remote control, whose signals pass through walls and



KID PROOFING

cabinet doors (\$40), as well as IR remote-control extenders. The company also offers an RF transmission system that lets you send audio and video signals plus remote commands over the airwaves (\$140). In my experience, IR remote extenders work fine. The audio/video RF systems do add noise, but in most situations they perform acceptably for noncritical listening. For your primary system, you'll want to stick with hard-wired connections.

Elcom Technologies (610-408-0130) makes devices that can send audio, video, and remote commands over residential AC wiring. Predictably, Elcom's ezAudio system (\$99) adds some noise and hum, but less than you'd expect. With ezTV (\$99), there is noticeable ghosting and softening of the picture. The IR emitter provided with ezTV and the ezRemote IR extender (\$70) fastens directly to the IR sensor on the component you want to operate, which means it can control only that component.

Recoton's and Elcom's video-transmission systems transmit RF-modulated TV signals, not composite or S-video. The performance of devices that transmit signals over the airwaves (RF) or AC wiring can vary a lot from location to location, so it's best to buy from a dealer who will take them back if they don't work well in your setup.

Most people prefer to keep all their components in

the listening room, in which case the best method of protection is a closed cabinet (just make sure there is adequate ventilation). A model with glass or (safer) Lucite doors will allow infrared remote commands to pass

through. However, most of these cabinets have only magnetic latches — an easy conquest for any curious kid. If your cabinet has knobs on the front, a plastic sawtooth lock that goes over the two knobs will provide extra defense. For cabinets with a single door, there is a variety of latch-type items, including ones that consist of a plastic strip with an adhesive backing at one end and a Velcro fastener at the other. The strip goes on the door, while a matching adhesive-backed Velcro pad goes on the cabinet. These products are available from many hardware and children's stores. I got mine at Toys "R" Us.

If you're going to use an open component cabinet, you have to protect components individually. There are some products that do this, such as plastic covers for VCR tape wells. With the cover in place, your tyke can't jam a jelly sandwich into your VCR. Even a simple VCR dust cover might be enough.

If you're concerned that your child might slide a component off the shelf and onto his noggin, you can put some reusable adhesive like LePage's Fun Tak on each foot of the component, which will secure it to a degree at negligible cost. If you really want to hold it taut, you can use Quake-Hold straps (800-418-7348), which run between \$8.99 and \$14.99.

You can prevent components from being operated by the junior set by connecting their AC cords to a power strip mounted high on the back of the cabinet. Whenever you're not using the system, turn off the strip's power switch. Just remember to check the volume setting before you turn the system back on!

The rat's nest of cables at the back of a component cabinet can pose a slight but

significant strangulation hazard. Also, a strong tug can cause shorts on speaker outputs or open grounds on signal inputs. You can reduce these risks by bundling the cables with tie-wraps (bundle AC lines and signal cables separately) and fastening the bun-

dles to the stand. AudioStream's Premier Cable Channel (available exclusively from Paradigm speaker dealers for \$35; call 905-632-0180 to locate the nearest dealer) reduces cable chaos by hiding wires under a plastic sleeve that attaches to the back of the cabinet.

Cable runs between amplifiers and speakers (and source components and TV) pose a tripping hazard. The best advice here is to run wires along baseboards and around doorframes, or behind walls, taking the shortest route possible out from the wall to the speaker. Wires should be firmly fastened down so that there are no dangerous loops.

At the crawling stage, kids will put almost anything in their mouths. If tacks or nails holding cables to the floor or baseboard work themselves loose, they could prove dangerous, if not fatal. Wire-mounting clamps, available from specialty wire suppliers such as Monster Cable (415-871-6000), are safer. Whatever fastener you use, make sure it's adequate for the job and that each one is securely in place. Be especially careful if you're fastening cable to drywall, which won't hold short tacks, or if you're going through carpet to a wooden floor underneath. And, of course, take care that you don't short out cables when fastening them to walls and baseboards (it's easy to do).

You may be able to reduce tripping hazards by passing cables under carpets or putting an area rug over them. (*Don't* do this with AC leads.) Monster Cable and other specialty wire suppliers offer flat cables designed to be routed around baseboards and doorframes; most have paintable jackets.

If you want to go all out, remove the baseboard molding, hollow it out enough to accommodate the cables, put the cables in place, and then replace the molding. If you want to leave the wire on the surface but out of reach, use hollow plastic sleeves, which are available from some specialty wire companies and large office-furniture suppliers.

When babies are starting to stand, they'll use any available structure to pull themselves up. A TV on a flimsy stand is a dangerous, top-heavy hazard. Look for a stand made specially for your TV, with some kind of clamp to keep the set in place.

Speakers on stands present one of the greatest toppling risks. You can reduce the danger by applying reusable

Crawling babies will put almost anything in their mouths, or use anything in reach, like a speaker stand, to pull themselves up.



Children Will Listen

Sometime after your first child is born, you'll make a discovery about your audio/video equipment. It's not yours anymore. It's hers. The discovery will come when you attempt to fill a precious quarter-hour with a Beethoven sonata, or maybe Ella Fitzgerald singing your favorites from *The Gershwin Songbook*.

Your toddler will let you know, with whatever language skills she has, that she wants to listen to Raffi's "Willoughbee Wallaby Woo."

"Sweetie," you'll implore, "it's my turn. We've already listened to that 346 times this morning." After you've given in, you'll wonder if there isn't a way you can get your little one interested in serious music.

Maybe there is.

The first time my wife's cousin, Allison Girling, and her children visited us, I asked what sort of entertainment Jacob, 6, and Sarah, 4, would like. "Have you got *The Magic Flute*?" their mother asked. I put it on, and the kids listened happily while the adults chatted.

Jacob's interest in classical music started when he was 2 years old. "We were watching *The Nutcracker* on American Ballet Theater, and he was entranced by the music and the movement of the dance," recalls his mother. Sarah and Jacob's interest in opera was inspired by a televised performance of *The Magic Flute* with sets by the British painter David Hockney. Again, the appeal was as much visual as musical. Sarah, now 7, continues to be very keen on opera.

Girling thinks part of the reason they're receptive to serious music is that they hear it frequently. Saturday-afternoon Metropolitan Opera broadcasts are a regular part of the domestic routine. But kids' musicians such as Raffi or Sharon, Lois, and Bram are also popular with the family. And they like BMG's Classical Kids series, with productions like *Mr. Bach Comes to Call* and *Beethoven Lives Upstairs* that "really prepare kids' ears," Girling says. "They're more receptive when they eventually hear the music these stories are based on."

Ezra Schabas, the children's grandfather, is professor emeritus in the faculty

of music at the University of Toronto and a former principal of the Royal Conservatory of Music in Toronto. "Early exposure to good music puts you ahead — just like anything else," he says. "It means you have more years of enjoyment. The big thing is to be selective about the kind of music children hear and the setting they hear it in. It should be a setting without interruptions or distracting elements. But don't make it something the child is required to do."

Cynthia Daan-Beardsley, a Toronto author and early-childhood music educator, says that very young children absorb far more from simple music, such as Raffi's *Singable Songs for the Very Young*, than from complex musical arrangements. And long compositions can overwhelm children's attention spans. She thinks it's important that music be an active as well as passive pursuit. Parents can instill a sense of involvement by singing to their kids and by choosing musical experiences that invite the child to participate. With this foundation, kids will be ready for richer experiences.

With music programs being cut back by many school boards, kids are going to have to learn about music at home. At our house, the little one adores many kids' records, but she's also taken with Ella Fitzgerald (and has just started to sing along with "It's Delovely" from *The Cole Porter Songbook*), Broadway musicals ("I Am Sixteen" from *The Sound of Music* is frequently demanded), movie soundtracks ("A Spoonful of Sugar" from *Mary Poppins* is playing in the background as I write this), and even some classical music, though we've had to sugarcoat it by inventing story lines. The galumphing "The Montagues and the Capulets" section of Prokofiev's *Romeo and Juliet* has become "Elephant Music." Our little girl stomps the room swinging one arm like a trunk. She likes all these musical treats in short, constantly repeated segments.

Even though I've grown to like Raffi, Prokofiev sure beats endless repetition of "Willoughbee Wallaby Woo." Still, there's no doubt who's in charge of the music system, and it's not me. — G.B.

adhesive (like Fun Tak) to the bottom of the speaker, but it's much safer to use a stand that screws into the bottom of your speaker. That may not prevent the whole structure from toppling, however. You can lower the center of gravity, and thus the risk of accidents, by using stands that can be filled with sand. That increases total weight, though, and thus the risk of damage and injury should an accident occur. If the stand is on a flat surface, applying reusable adhesive to the bottom will make it less prone to toppling.

A child can also topple a speaker by pulling on wires attached to it, particularly if the input terminals are a considerable distance off the floor. If you have speaker stands with a hollow support, you might be able to drill holes through the base and the top of the main column, then route the cable through the column; NF series stands from Sanus (800-359-5520) and some stands from other companies have pre-drilled holes.

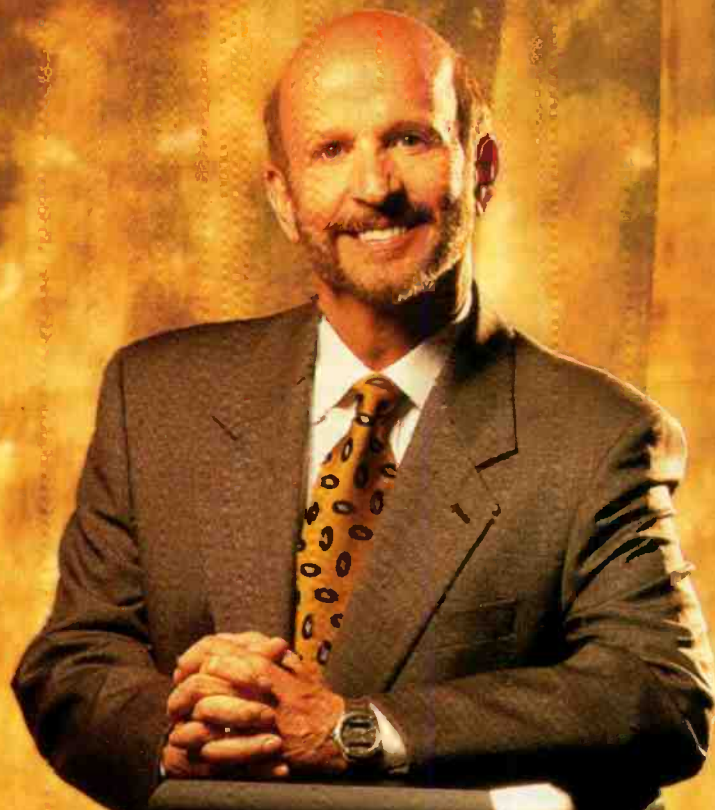
The cable connection is an issue with any speaker out in the open. Make sure the connection is tight enough that Junior can't loosen it. If the terminals are high up on the speaker, fasten the wire to the cabinet with Fun Tak so that there aren't any dangerous loops.

If your speakers are still prone to toppling, consider either replacing them with floor-standing models or keeping them on shelves. You can move them out onto stands for private concerts when the kids are down for the night.

Your CD and videocassette collections are another irresistible attraction. The best way to secure them is in a closed cabinet. You may wish to complement the cabinet's latch with some other barrier, such as a Velcro tab. To protect recordings on open shelving, try cramming the discs together tightly so that your wee one can't pull them off, or locate the shelves up and out of the way.

Even after thorough kidproofing, you'll still have to exercise some vigilance and provide some firm direction to protect your small fry and A/V equipment from each other. But the preventive effort will dramatically reduce the chasing around you have to do and give you a little more time to enjoy playing with your electronic toys. □

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COPYCATS

New technologies have the recording industry fighting record pirates harder than ever

The case had been building for years, and investigators and law-enforcement officials were nearing the end of a difficult operation. The agents prepared for a series of carefully orchestrated raids and arrests. Suspects were profiled, with a special focus on criminal histories and previous violent behavior. Teams were assigned and site-specific intelligence spelled out. Where were the entrances and exits to the illegal factories? Might they encounter armed guards or vicious attack dogs?

Finally, more than a hundred agents fanned out to locations in four states. Those assigned to arrest some two dozen far-flung suspects performed a truly dangerous job. And the teams who stormed the factories looked like they came out of a big-budget Hollywood action movie, with bullet-proof vests, raid jackets, and plenty of firepower at their disposal.

What did they hope to find when they burst through those factory doors? Drugs? Weapons? Counterfeit currency? The agents expected — and found — two of the largest and most successful audio-cassette counterfeiting rings ever uncovered in the United States. Banks of high-speed duplicators — capable of making dozens of 60-minute counterfeit cassettes in a single 30-second pass — were seized, as were thousands of finished tapes containing the work of such varied and popular recording artists as Pearl Jam, Pink Floyd, LL Cool J, John Lee Hooker, and Kenny G.

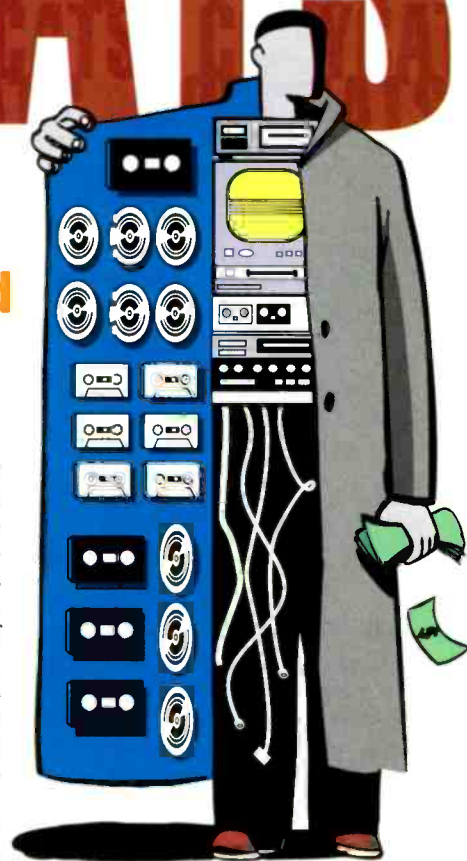
The two counterfeit rings were al-

legedly supplying retail stores, street vendors, and flea markets throughout the Eastern U.S. Their efforts accounted for nearly one-third of the legitimate music industry's annual losses from domestic piracy according to the Recording Industry Association of America (RIAA), which estimates total domestic losses at \$300 million a year. The raids, which took place in the fall of 1995, resulted in seventeen indictments. Last summer, three ring-leaders were convicted and sentenced.

Times have changed dramatically since the days when the RIAA, which represents all of America's major record labels, inspired vocal derision among music fans with its ubiquitous battle cry, "Home taping is killing music!" Illegal and illicit music recording is a huge global business estimated at \$2 billion annually. In 1995, more than two million counterfeit CDs were reportedly seized in China alone — by a government that is just now recognizing Western copyright law.

Back home, inexpensive CD-R recorders and disc-duplication machines enable bootleggers to manufacture high-quality copies of live recordings without leaving their apartments. And the latest online technology has computer-savvy music fans trading near-CD-quality recordings on the Internet. Those concerned with piracy must surely wax nostalgic for a time when record collectors making compilation tapes for their friends seemed the biggest threat to profits.

BY KEN KORMAN



Even the RIAA admits that not all record piracy is created equal. It distinguishes between three basic types of illegal recordings. *Counterfeit* recordings, like those confiscated in the case described above, are mostly cheap reproductions of legitimately released albums. *Pirate* recordings also contain commercially released music but are repackaged into single-artist "greatest hits" or multi-artist "DJ mix" compilations. *Bootlegs* generally contain unreleased live recordings or studio outtakes by artists with large and insatiable followings. While record-industry officials tend to combine all three types of illegal recordings when compiling statistics and estimating losses, many music fans are loath to equate the relatively small, fan-oriented bootleg business with more pernicious forms of piracy.

No one defends counterfeit or pirate recordings, and for good reason. Record companies turn a profit only on

the top 15 percent or so of their artists. Revenues from the sale of these artists' recordings subsidize many less popular but culturally significant types of music, including most jazz and classical recordings. And even within the pop realm, mega-hits provide the resources record companies need to find and nurture new bands. Top-selling artists inevitably attract the vast majority of counterfeit activity, jeopardizing the delicate structure of the entire music industry. Besides, counterfeit and pirate recordings don't do justice to the music they contain, which means they are no bargain for fans at any price.

Bootlegs, on the other hand, constitute a far more complicated and morally ambiguous problem. Illicit live recordings of major artists don't necessarily displace sales of legitimate recordings. The typical bootleg buyer is

bootlegs remained mostly a minor nuisance to the recording industry, which always seemed to have bigger fish to fry. Record companies hadn't yet tapped into the specialty collector's market with today's box sets and "expanded editions," so savvy entrepreneurs were happy to step in and fill a relatively tiny niche market.

Things began to change after CD-format bootlegs appeared in 1989. Murky and inconsistent overseas copyright laws allowed European bootleggers to create a larger and more lucrative industry than ever before. Record-industry priorities gradually shifted to encompass the bootleg market, and new laws came into effect that made it much easier to track down and convict bootleggers. Most important was the federal Anti-Bootleg Statute of December 1994. While previous statutes criminalized domestic manufacturing,

famous downtown Manhattan record stores, Second Coming and Revolver Records. New York State Attorney General Dennis C. Vacco held a sidewalk press conference and proclaimed Greenwich Village the "single largest distribution point in the East, perhaps in the country," for bootlegs.

Small, independent record stores have always been the primary outlet for illicit recordings. In the 1990s, the retail music business has consolidated into large chains like Tower, Virgin, and HMV, making it much harder for smaller outlets to compete. "Bootlegs are an economic issue for the independent record stores," says Bill Glahn, editor and publisher of *Live! Music Review*, which covers the bootleg world from the fan's perspective. "To keep their doors open, they have to offer something you can't find at Wal-Mart or Best Buy." In most cases, that "something" isn't bootlegs but used, legitimate CDs, another commodity that the recording industry wants to eradicate.

Sympathy for the plight of independent record stores, which play a key role in breaking new bands that later make money for major labels, reached an all-time high last spring when Jules D. Zalon, a lawyer representing the Dave Matthews Band, mounted his own "sting" operation on several small record stores in the Northeast.

After sending someone in to purchase bootleg Dave Matthews Band CDs, Zalon returned to each store with a federal marshal, confiscated all the stores' illicit discs — even those by bands that don't object to bootlegs — and threatened to sue for \$100,000 for each CD, according to *The New York Times*. He then offered each store the chance to settle out of court in the form of an immediate cash payment of \$10,000 or \$15,000, which was enough to bankrupt some stores. Even those opposed to illicit music in any form were shocked by these tactics. The Dave Matthews Band soon pleaded ignorance and backed off from the entire matter, but it was left with the biggest rock-related public-relations disaster since John Lennon casually remarked that the Beatles were more popular than Jesus.

Ironically, all the recent efforts to stamp out illicit music are unlikely to have much effect in the long run. It's not just underground entrepreneurs who are keeping the field alive but also recent advances in audio technology. CD-R recorders have made boot-

Record companies turn a profit on only the top 15 percent of their artists.

a deeply devoted fan who already owns a particular artist's entire catalog and is merely looking to feed his or her passion with additional "rare" and "historic" material. Phish, the Black Crowes, the Dave Matthews Band, and offshoots of the Grateful Dead are among the performers who not only condone live taping but set up special "taping areas" at their shows for fans.

Artists and record companies certainly deserve the right to control their own destinies, just like the rest of us. But in the view of many music fans, precious law-enforcement resources might be better spent on something other than an essentially unwinnable war against almost victimless crimes.

The long and colorful history of bootlegs adds to their continuing allure. Legend has it that the modern bootleg industry began when two California teenagers came across some unreleased Bob Dylan studio tapes. They had some records pressed for friends, then reordered as the word spread and money poured in. There was nothing much to stop them — laws specifically banning the reproduction of copyright sound recordings didn't hit the books until 1972. Columbia Records finally managed to legitimately release these recordings in 1975 as Dylan's now-legendary *Basement Tapes*.

Over the next two decades or so,

distribution, and trafficking of bootlegs, the new law provided for seizure of bootlegs manufactured outside the U.S. by Customs "at the point of importation." This was just what anti-bootleg forces had dreamed of.

"It gave us a very effective tool for stopping the influx of bootleg recordings to the U.S.," says Frank Creighton, an RIAA vice president and associate director of its anti-piracy office, of the new federal law. According to Creighton, more than 800,000 bootleg CDs were confiscated as the result of a single year-long investigation, dubbed "Operation Goldmine," that ended in March of this year.

Working in conjunction with U.S. Customs, the RIAA lured several of the biggest alleged European bootleggers to Florida in an elaborate and unprecedented undercover sting operation. Though the case has not been fully resolved at this writing, observers and participants on both sides called it "the end of an era" for the bootleg market in Europe and America.

Tougher state laws have allowed the RIAA to target bootleg retailers. In New York, an amendment to the penal code that took effect in November 1995 made it a Class E felony to distribute or sell bootlegs. State law had previously covered only manufacturing. In July 1996, as agents busted two

legging far easier than ever before. Anyone with a live tape, a good home computer, a \$500 CD-R drive, some \$5 blank CD-Rs, and a little knowledge can put himself in business almost overnight.

"Bootleggers can knock out 120 CDs overnight while they sleep," explains *Live! Music Review's* Glahn. "In a week you've got a thousand copies, which is enough to satisfy the collector's market for any given title."

Even CD-R doesn't pose the potential long-term threat now perceived in recent advances in online technology. A new audio data-compression scheme called MP3 (MPEG-2, audio layer three) makes it possible for casual Net-surfers to download a typical song with near-CD-quality sound in about 20 minutes over standard phone lines. While that song might occupy 60 megabytes in standard CD-audio form, it's only about 5 megs encoded with MP3. And the software needed to decode and listen to MP3 files is widely available on the Internet.

To the dismay of the recording industry, college students across the country began setting up archives of MP3-encoded music early this year. Most, such as Stanford University computer-science major David Weekly, were motivated purely by fascination with a powerful new technology. Weekly set up an archive of about 160 songs by artists like R.E.M. and Orbital, and he traded them openly with others maintaining MP3 archives on the World Wide Web.

About two weeks later, Stanford's Network Services division contacted Weekly after noticing that his Web site was responsible for about 80 percent of the school's network traffic. "They were concerned that I might be running some kind of commercial service," Weekly says. The same day, Geffen Records called the school about Weekly's site. "Geffen was actually just trying to help — to keep me from being sued by some of the large music-industry organizations," Weekly says. He shut down his site immediately, which proved a wise move: The RIAA soon filed civil litigation against three similar student-run MP3 music archives.

The RIAA had already contacted universities across the country to warn that unauthorized MP3-encoded music was illegal, but it only saw the number of MP3 archives grow on a daily basis. "It got to the point where we had to show we meant business," says the

RIAA's Creighton. At this writing, the RIAA had received either temporary or permanent injunctions against the three sites. But keeping copyright recordings secure in the digital domain may prove difficult in the future.

The RIAA is now studying a number of new systems for copy-protecting and silently "watermarking" recordings with copyright information, which would at least help track the product if large-scale digital piracy occurred. "Technology has created this problem, and I believe technology is going to be the solution to this problem," says Creighton. Meanwhile, another compression system that's even better than MP3 — Advanced Audio Coding (AAC) — will likely be available by the end of the year. By then, the recording industry may well be trying to sell music itself through legitimate downloads from the Internet. One company, N2K, is already offer-

ing authorized MP3 song files at \$1 each from its Web site, though reportedly with limited success.

In any case, the record industry may soon have to make room for a new wave of computer-savvy entrepreneurs. Stanford's David Weekly, who has just begun his sophomore year, has already founded the MP3 Consortium, which studies legal issues related to digitized music, and a company called Universal Digital Media, which he hopes will distribute legitimate music files over the Internet to a captive college audience. "We aren't out to hurt anyone," Weekly says. "We're looking for ways to work with artists and record companies and make everybody happy with this new technology, because we think it can happen."

Ken Korman is a regular contributor to Video magazine and writes frequently about home entertainment.

DVD Copy Protection

As complicated and intractable as the music-piracy problem is, it pales compared with the potential threat that video piracy represents. Home video now accounts for some 60 to 70 percent of the profits made by the Hollywood studios. And because many theatrical films are released gradually across the globe, a pirated movie might actually displace all-important foreign ticket sales as well as video revenues. The stakes couldn't be higher now that DVD has arrived. The electronics and entertainment industries responded to this challenge with a series of new copy-protection schemes.

A special form of the Macrovision system used for videotape was designed specifically for DVD. It allows those authoring DVD software to activate copy-protection "control bits" as a master is made. DVD players respond to the control bits by adding copy-protection signals to their analog video output, resulting in a severely degraded image when it's copied to a VCR.

Six optional DVD "regional codes" protect the country-by-country rollout of movies. Each DVD player carries an internal code for the region in which it is sold. The player will block playback of any disc with the wrong code for that region (discs with no regional coding will play, all else being equal). This means that the import market so dear to many CD and laserdisc collectors may only play a minor role in the DVD universe. Some major suppliers have promised to omit the regional codes for catalog

titles in the future, but most current DVDs are regionally coded.

DVDs also contain a Copy Generation Management System (CGMS) intended to prevent perfect direct-digital copies from being made. This will become crucial to the prevention of large-scale piracy as recordable DVD-RAM decks become available over the next couple of years and computer-based DVD-RAM drives even sooner.

Further complicating DVD-piracy questions is Hollywood's fervent desire that Congress pass legislation making it a felony to circumvent DVD copy-protection. Several such bills have met with defeat in recent times, but more have been introduced. While organizations such as the Home Recording Rights Coalition are dedicated to defeating such a law, Hollywood appears unwilling to commit wholeheartedly to DVD without this protection.

As we went to press, a consortium including Disney, Paramount, Universal, Zenith, RCA, and Panasonic expressed support for a new pay-per-viewing-period format called Divx. As it is envisioned, consumers would buy a super-encrypted DVD for about \$5 that could be played for only 48 hours from the time it is first inserted in the player. Subsequent two-day viewing periods could be purchased automatically through a Divx player. Although Divx players would be compatible with normal DVDs, Divx discs would not play in standard DVD players.

— K.K.

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BEST OF THE MONTH

**STEREO REVIEW'S
CRITICS CHOOSE THE OUTSTANDING
CURRENT RELEASES**



JILL FURMAN/OKS/ERIC

Oasis Is Getting Better All the Time

Say, has anybody noticed that Oasis sounds a little bit like the Beatles? Just kidding. If you want to write off the Manchester five as Fab Four soundalikes, go right ahead: they certainly drop enough references on *Be Here Now* to make it worth your while. But they have always been too good, not to mention too cocky, to be mere throwbacks to the Sixties. They

really want to be *better* than the Beatles, to inspire young bands thirty years from now, and to make albums that matter in the Nineties. With *Be Here Now* they reach at least the last of those goals.

Not a modest record by any means, the new album aims for grandeur at every turn — in the epic song lengths (only three are under 5 minutes), the colossal production, and the anthemic tone of

the lyrics. Guitarist/songwriter Noel Gallagher, one of the surest hook-slingers in modern pop, gives the record a solid melodic foundation, and there's nothing retro about the spacious guitar sound. The vocals of brother Liam Gallagher have their usual swagger, and, yes, he still sounds like a cross between Johns Lennon and Lydon. As for the many references — the title "Magic Pie" (was it a flaming one?), the quotes from Bob Dylan and the Beatles, the familiar David Bowie chord progression in "Stand by Me" — the Gallaghers bring their own spirit to the party they're crashing.

The real surprise, considering the band's rocky public image, is the amount of warmth and camaraderie that these songs put across. The opening single, "D'You Know What I Mean?," reaches out to their fans without condescending. "My Big Mouth" backs self-effacing lyrics with Sex Pistols guitars. And "The Girl in the Dirty Shirt" is a guttersnipe's love song that avoids cheap sentiment.

All the stops get pulled out in the album's final quarter, where "All Around the World" and "It's Gettin' Better (Man!!)" blend into a suite running nearly 20 minutes, ending with an orchestrated coda that makes "Hey Jude" sound subtle. Here the guys get so optimistic that they risk sounding air-headed, but there's just enough toughness between the lines, and the crashing guitars of the second tune evoke genuine elation. It takes guts even to try something like this, and some kind of brilliance to carry it off. *Brett Milano*

OASIS: Be Here Now.

D'You Know What I Mean?; My Big Mouth; Magic Pie; Stand by Me; I Hope, I Think, I Know; The Girl in the Dirty Shirt; Fade In-Out; Don't Go Away; Be Here Now; All Around the World; It's Gettin' Better (Man!!); All Around the World (Reprise). EPIC 68530 (72 min).

A Grand Duo: Barenboim, Lupu Play Schubert

When enthusiastic reports began coming from Europe of Daniel Barenboim's programs of Schubert's four-hand piano music — some with Radu Lupu, others with Andras Schiff (with one or the other on hand to turn pages) — it seemed more than likely there would be recordings, the only questions being how soon and how many. A new Teldec CD does not give all the answers, but whether it is the first of several or the only one planned for now, it is a treasure. On it Barenboim and Lupu perform one of the most familiar of Schu-

BEST OF THE MONTH



Daniel Barenboim and Radu Lupu

that many who love it in, say, Guiraud's orchestral setting have no idea it was composed for piano duet, or that it is the first in a set of three such pieces, all of which are utter delights. The large-scale Sonata in C Major — the so-called "Grand Duo" — is indeed on so grand a scale, and so "orchestral" in character, that it was assumed for some time to have been a piano reduction of the supposedly lost "Gastein" Symphony. Joseph Joachim and, more recently, Raymond Leppard actually orchestrated this work to demonstrate its symphonic possibilities. The mysterious "Gastein" Symphony, we now know, was none other than the well-loved "Great C Major" Symphony,

Schubert's Ninth, while the "Grand Duo," on the same level of inspiration, is an out-and-out masterpiece in the four-hand idiom in which Schubert remains the all-time grand master. Preceding it on the CD is the masterly contemporaneous set of eight Variations in A-flat Major.

What Barenboim and Lupu give us here

has not the slightest connection with anything so trivial as superstar performers out for a romp. They lavish on this music all the seriousness, affection, and insight they bring to their solo performances, and the pleasure they find in their collaboration comes through in every phrase. Something else they do *not* do is attempt to evoke the spirit of a "Schubertiade," one of those occasions when his music was performed in the intimate setting of a friend's parlor. Barenboim and Lupu's playing, in which fastidiousness and spontaneity coexist on an almost unimaginable level, make it brilliantly clear that, while Schubert had to content himself with domestic performances, such masterworks were surely conceived for as broad and diverse an audience as the big C Major Symphony. The recording itself is first-rate and beautifully tailored to this particular material.

Richard Freed

SCHUBERT: Marches Militaires, Op. 51 (D. 733); Variations on an Original Theme, Op. 35 (D. 813); "Grand Duo" Sonata in C Major, Op. 140 (D. 812).

Daniel Barenboim, Radu Lupu (piano duo). TELDEC 17146 (77 min).

Matraca Berg: The Songwriter Sings

With credits that include Deana Carter's "Strawberry Wine" and Patty Loveless's "I'm That Kind of Girl," Matraca Berg is better known as a songwriter than as an artist in her own right, but only because somebody at her former record label slipped up. Like Rosanne Cash, to whom she bears a slight vocal resemblance, Berg has the goods to be a major star both with country's sophisticated uptown audience and in the larger pop arena, as she amply displays on *Sunday Morning to Saturday Night*.

In her soulful, sensuous, and impassioned soprano, Berg constructs a song cycle of life in the small-town South, but one that's more from the viewpoint of Eudora Welty than, say, Jeff Foxworthy. Her characters are complicated, confused folks who, like most of the rest of us, struggle mightily with the pull between right and wrong, as well as with the conflict of Saturday night's fire down below and Sunday morning's blaze and brimstone. There's the truck-stop waitress of "Good Ol' Girl," who dutifully goes to church with her mother, piling her hair up high so she'll feel closer to God. But she also keeps a picture of Elvis when he came through town, sneaks out with a

trucker now and then, and yearns to see more than the sun creeping over her dingy windowsill each morning. Then there's the nice old lady of "Back When We Were Beautiful," who, to an almost light-opera parlor song, poignantly relives her younger days through the ghostly faces that float through her photo album and her mind.



RISE TIDE

If this record is a multifaceted profile of human loneliness — the exquisite "Here You Come Raining on Me," with its haunting National steel-guitar intro, begins with the stark scene of "Blackbird shivers on the old clothesline" — the album is not without its lighter moments. "Back in the Saddle" is a sexy romp across a satiric landscape of cowgirls, western music, and the absurd theory that opposites attract in the wacky back 40 of love. But then, as Berg proposes, we're all just "Along for the Ride," aren't we?

"Dreams die hard around here," she sings in the album's closer, "The Resurrection," which opens with an electric guitar straight out of a David Lynch movie. If the people who walk these back streets of life feel "stuck between lost and found and nowhere," Berg, who understands such feelings, should be welcome company. And, like the lover of "Here You Come Raining on Me," she'll be sneakin' up on your heart's blind side.

Alanna Nash

MATRACA BERG: Sunday Morning to Saturday Night.

Along for the Ride; That Train Don't Run; Back in the Saddle; Here You Come Raining on Me; Some People Fall, Some People Fly; Back When We Were Beautiful; Sunday Morning to Saturday Night; Good Ol' Girl; Give Me Tonight; If I Were an Angel; The Resurrection. RISE TIDE 53047 (40 min).

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BEST OF THE MONTH

Stravinsky's *Firebird* and More

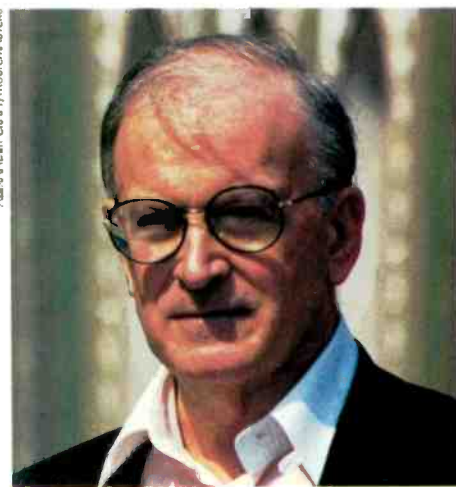
Robert Craft's multivolume survey of Igor Stravinsky's complete works, begun in 1992 for MusicMasters and now up to Vol. IX, which features *The Firebird* and other works, is clearly a labor of love. The project is based on Craft's intimate association with the composer over more than twenty years, as assistant and biographer, as well as scholarship nourished by his access to original sources.

I count more than a dozen CDs of the complete *Firebird*, but Craft's new recording profits from both his scholarship and his conductorial expertise. The details of his research are set forth fascinatingly in his elaborate program notes with the CD. I especially like the added elements in the grotesque Kastchei episodes and the use of the long natural trumpets in the final pages, which gives the piece an extra charge of excitement. What we have in this well-crafted performance is not only splendid musicmaking but what amounts to a critical edition of a score that has undergone an enormous amount of pushing and pulling about since its 1910 premiere.

The recording as such has plenty of richness and brilliance, and the Philharmonia Orchestra's performance leaves nothing to be desired. For a complete *Firebird*, this one and Stravinsky's own 1961 recording on CBS are my first choices.

The CD leads off with the early *Fireworks*, composed for the 1908 wedding of Rimsky-Korsakov's daughter, then jumps to 1965 for a 26-second orchestral canon based on the Russian tune that forms the basis for the concluding pages of *The Firebird*. The Four Etudes are from the World War I era, and the 1928 orchestrations offered here are tart balletic pieces with the exception of No. 3, a "Canticle" with overtones of the *Dies Irae*. These works, too, are all well played by the Philharmonia.

Late Stravinsky is represented by the 1964 Variations for Orchestra — hermetic serialism on paper but quite accessible if listened to as ballet music: Balanchine knew what he was doing when he created a dance work from this score in 1966, stretching its less than 6-minute length with the simple expedient of repetition. Prime Neoclassical Stravinsky is represented by the 1946 Concerto for Strings, whose three movements provided the basis for Jerome Robbins's stunning



Conductor Robert Craft

1951 ballet *The Cage*. Both of these works are performed by the London Philharmonic, and the playing is stunning in its linear and rhythmic precision. *David Hall*

STRAVINSKY: The Firebird; Fireworks; Canon on a Russian Popular Tune; Four Etudes; Variations for Orchestra; Concerto for Strings.

Philharmonia Orchestra and London Philharmonic, Robert Craft cond. MUSICMASTERS 67177 (77 min).

NOW ON CD

POPULAR

TITO PUENTE: 50 Years of Swing. RMM 82050 (three CDs).

El Rey del Timbal — The Best of Tito Puente and His Orchestra. RHINO 72817.

Oye Como Va! The Dance Collection. CONCORD PICANTE 4780. Take your pick: a whopping 3 hours from RMM, spanning 1946 to 1996, or a single CD from Rhino, focusing on 1949 to 1987. The Concord Picante disc has recordings of the 1980s and 1990s.

ALAN STIVELL: 70/95 Zoom. DREYFUS 189 (two CDs). A quarter-century of music from the Breton harpist. French liner notes.

ANTHOLOGY OF AMERICAN FOLK MUSIC. SMITHSONIAN FOLKWAYS 40090 (six CDs). Harry Smith's pioneering series, first released in 1952 on three double LPs, reappears in a deluxe box with a 100-page booklet and an enhanced CD.

DIAMOND CUTS — A COMPILATION OF BASEBALL SONGS AND POETRY. HUNGRY FOR MUSIC 003 (mail-order only;



telephone, 888-843-0933). Just in time for the World Series: heavy-hitters Bob Dylan and Bob Costas share the roster with the likes of Dan Bern and S.F. Seals in this benefit CD.

THE ERNIE KOVACS RECORD COLLECTION. VARÈSE SARABANDE 5789. Not a Kovacs comedy set but rather a compilation of music from his TV shows of the 1950s and early 1960s, including performances by Esquivel, Yma Sumac, and, yes, Kovacs, in duets with wife Edie Adams.

CLASSICAL

BETHOVEN: Violin Concerto.
BRAHMS: Violin Concerto.
Nathan Milstein (violin); Pittsburgh Symphony,

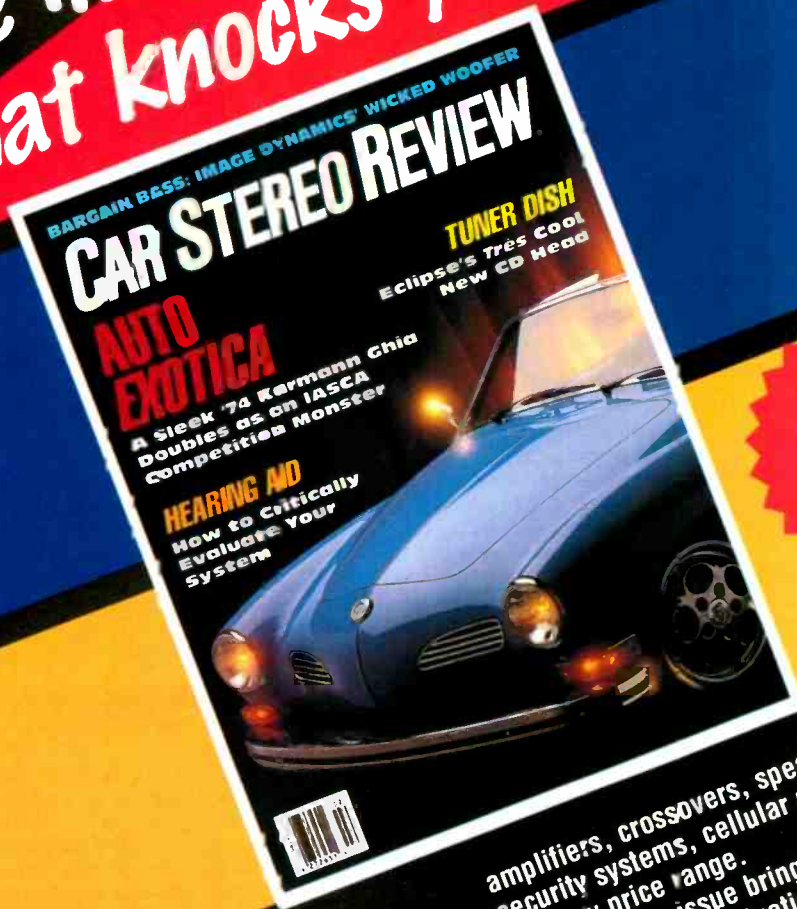
William Steinberg cond. EMI 66550. Digitally remastered from original mid-1950s mono recordings by the celebrated Russian-born American violinist.

DVORAK: Requiem; Mass in D Major. Soloists; Choruses; London Symphony; Istvan Kertesz and Simon Preston cond. LONDON 448 089 (two CDs). Kertesz's Requiem "is a warm and lyrical performance that rises to convincing and never overstated fervor" (May 1970).

HAYDN: String Quartets, Opp. 71 and 74. Griller String Quartet. VANGUARD SVC 62/63 (two CDs). Britain's Griller Quartet, formed in 1928, was in residence from 1949 to 1961 at the University of California, Berkeley, where it recorded these sets in 1959.

MUSSORGSKY: Pictures at an Exhibition.
TCHAIKOVSKY: Piano Sonata in G Major.
Sviatoslav Richter (piano). MELODIYA/BMG 29469. The outstanding late Russian pianist is heard here in mid-1950s mono recordings made in Moscow.

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POPULAR MUSIC

NEW RECORDINGS REVIEWED BY CHRIS ALBERTSON, FRANCIS DAVIS,
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ALANNA NASH, PARKE PUTERBAUGH, KEN RICHARDSON, & STEVE SIMELS

EARTH, WIND & FIRE:
In the Name of Love.
PYRAMID/RHINO 72864 (49 min).

★★★★

**SMOOTH ELEMENTS — THE SONGS
OF EARTH, WIND & FIRE.**
SHANACHIE 5036 (58 min).

★★

After four years away from the studio, Earth, Wind & Fire has come up with its best album in at least a decade, *In the Name of Love*. Founder/producer Maurice White has turned down the technology to recapture the warmth of the band's early sound. Here again is the blend of R&B-based vocals, African-derived rhythms, and jazz-influenced playing that made EWF a genre-bending group.

The signature shouting horns provide an

exciting response to the strutting vocals of the catchy title song. Lead singer Philip Bailey intoxicates with his falsetto in the hauntingly atmospheric "Cruising." Familiar treatments occasionally make way for a bit of change; lyrics of the rousing "Revolution" are pure hip-hop, with Bailey's son serving up a rap that sounds more like the Sixties than the Nineties. But what matters most is the music, and with this set of skillfully shaped songs, White has positioned Earth, Wind & Fire to move into the next century.

Smooth Elements features instrumental versions of the group's hits, ranging from Tuck & Patti's virtuosic "Getaway" and Larry Coryell's kalimba-driven "Evil" to saxophonist Mark Johnson's bloodless "Devotion." The vigorous EWF vocals we know so well are sorely missed. David Benoit and

Russ Freeman avoid the problem in "After the Love Is Gone" by integrating singers Vesta and Phil Perry into their robust arrangement. But mostly, this is music for the Quiet Storm crowd, with just a few peaks among the bland. P.G.

DAN FOGELBERG: Portrait —
The Music of Dan Fogelberg 1972-1997.
EPIC/LEGACY 67949 (four CDs, 290 min).

★★

Listening to the sixty-plus songs on *Portrait*, including five previously unreleased tracks, it becomes clear that Dan Fogelberg is a talented tunesmith who is gifted with a fine sense of melody, a decent flair for poetic romanticism, and a warm, celestial baritone. But only a half-dozen of the songs are truly memorable: "The Power of Gold," "Dancing Shoes," "Same Old Lang Syne," "As the Raven Flies," "Sweet Magnolia (and the Travelling Salesman)," and perhaps "Tell Me to My Face," an old Hollies tune that he passionately revived with flutist Tim Weisberg. Otherwise, there's a lot of stuff here that sounds like copies of other, more original artists (Buffalo Springfield, Neil Young), and there's far too much dreck of the Barry Manilow school.

For us sentimentalists who love to wallow in the melancholia of lost love, you can't beat "Same Old Lang Syne," a perfect meeting place of romantic yearning, spiritual independence, and, yes, frozen food. If Fogelberg had kept his musical scope this focused, he might still be a hitmaker. Instead, right or wrong, he's the ultimate symbol of the overly sensitive male. A.N.

GENESIS: Calling All Stations.
ATLANTIC 83037 (68 min).

★★

As an English synth/orchestral pop album in the vein of Tears for Fears or Orchestral Manoeuvres in the Dark, *Calling All Stations* isn't bad. But as a Genesis album, it's pretty much a bust. Genesis, you recall, was a wildly creative progressive-rock group before the drummer got carried away with himself. The band's last really good record, the 1983 single "Mama," neatly coincided with the rise of Phil Collins's adult-contemporary solo career.

With Collins out of the picture, you'd think Genesis might make the art-rock comeback that long-time fans have been hoping for — with one more "Supper's Ready" for the road — but you'd be wrong. Instead, Mike Rutherford and Tony Banks have pulled in young, photogenic singer Ray Wilson and homogenized even more. Wilson has a perfectly fine set of pipes, but he fails to put across a Genesis-type personality — or any other type. The music here is pretty but slight; even the two 9-minute tracks are less Genesis epics than pop songs that take too long to make their point.

The two original members laid down most of the instrumental tracks before Wilson's arrival, leaving signs that the album could have been better. Banks can still turn a haunting melody, and his keyboard textures are the one link with the Genesis of old. And after twenty years as the band's

HOST GHOST CROONS TUNES

Don't let the Kid Rhino logo deter you: *Space Ghost's Musical Bar-B-Que* is definitely appropriate for adults, especially adults who are fans



of the Cartoon Network shows featuring the befuddled superhero from the Sixties. For those not in the know, *Space Ghost: Coast to Coast* is a Friday-

night talk show where the animated Ghost "interviews" live guests, such as Simpsons creator Matt Groening, shown here, and Beck, who on a recent episode donned a lampshade and took a nap. The variety-show spinoff, *Cartoon Planet*, has Space Ghost sharing the limelight with his band-leader, the giant space mantis Zorak, and another sidekick, the dimwitted space pirate Brak. All three will reduce you to a laughing puddle as they banter and warble on Rhino's CD, which serves up classics like "Don't Touch Me," "What Day Is It?," "Minkey Boodle," and "Smells Like Cartoon Planet." To hear Brak squeal through two previously unaired acoustic blues — and to hear Space Ghost declaim, "I got my mojo *risin'*" — is to know that life is deliriously silly.

© CARTOON NETWORK

nominal lead guitarist, bassist Rutherford is finally stepping forward and playing lead guitar. Still, *Calling All Stations* has the markings of a failed commercial effort; it's sadly appropriate that the title track's lyrics amount to a plea for airplay. *B.M.*

ETTA JAMES: *Love's Been Rough on Me.*
PRIVATE MUSIC 82140 (41 min).

★★★★★
Blues queen Etta James has long dreamed of recording a country album, but not even her most ardent supporters could have imagined what a powerful collaboration she would make with producer Barry Beckett, who came to Nashville steeped in the Muscle Shoals brand of country-soul. *Love's Been Rough on Me* is a passionately charged, often thrilling program. Drawing on several styles of countrified blues and R&B, James and Beckett simply *cook* here in a way neither has done in quite a while.

James, who frequently drops into her dusky alto, does particularly well by two songs of Troy Seals, "Hold Me (Just a Little Longer Tonight)" and "If I Had Any Pride Left at All," where she not only proves she's been there but transports you back, too. Her performance of Kenny Greenberg and Greg Barnhill's "Cry Like a Rainy Day" is the match of a great ballad and an even greater singer, with a palpable ache packed into nearly every measure. And she is so heartbreakingly good in a revival of Otis Redding's "I've Been Lovin' You Too Long" that she both takes your breath on the rise and chokes you up on the bridge.

Love's Been Rough on Me should be required listening for every cute young thing who goes to Nashville in search of a contract, believing he/she can move people. This, friends and neighbors, is the very definition of stunning interpretive singing. *A.N.*

K.D. LANG: *Drag.*
WARNER BROS. 46623 (53 min).

★★★★★
Canada's most visible chameleon continues her foray into lush orchestration and thematic envelope-pushing with *Drag*, a covers/concept album that plays on, yes, her sexual orientation but more heavily on smoking: the romance of it, the addiction of it, the contamination of it, and the fight to overcome it, only to succumb again.

It takes an artist as confident and campy as k.d. lang to pull off an album of songs made famous by artists like Peggy Lee ("Don't Smoke in Bed"), Les Paul and Mary Ford ("Smoke Rings"), and the Hollies ("The Air That I Breathe"). Sometimes her conceit runs thin, especially when she gets too cocktailish, as in "Smoke Dreams." But she triumphs through her inventiveness in plotting the arrangements and interpreting

Five-Star Captain

Drummer Bill Berry of D.R.E.M. named it one of his ten favorite albums. Writer Chuck Eddy elected it to *Stairway to Hell: The 500 Best Heavy-Metal Albums in the Universe*. And, hey, three STEREO REVIEW readers — Mark Axen, Gary P. May, and V. T. Wright — wrote to tell us they were compelled to shell out big bucks for a rare Japanese import of it. It, you see, has shown up perennially on lists of the Ten Most-Requested Albums Yet to Appear on CD in the U.S. But friends . . . it's here: the self-titled debut of Captain Beyond, originally released in 1972 by Capricorn and now, a quarter-century later, reissued by Capricorn Classics.

A classic it is. Here was a supergroup of four refugees from high-profile hard-rock bands: singer Rod Evans (Deep Purple), guitarist Rhino and bassist Lee Dorman (Iron Butterfly), and drummer Bobby Caldwell (Johnny Winter And). The album comes across like a progressive/space/metal *Abbey Road*, the second half forming a long medley of songs and reprises. And if you love guitars, Rhino will devastate you with a studio full of them.



His solos are searing but smart, and the abundance of riffs may lead you to believe he wrote the record with Dorman, but — surprise — the whole thing was co-written by Evans and Caldwell.

Sure, this CD reissue has its disappointments. Although it does include a rare photo of the band

on a mountain, it doesn't add lyrics or historical liner notes, and the reported bonus tracks simply didn't materialize. The cueing isn't always exact ("Astral Lady" is *not* 15 seconds long), but then the original album often mislabeled song timings ("Arm-worth" was never 2:50 but rather 1:50). Rest easy, the entire record is here. And, sure, it would have been neat if the legendary original 3D cover art had been replicated, but . . . enough. For once, here's a case where *none of that matters*, because, in all honesty, it's something of a miracle that this obscure masterpiece has made it to domestic CD at all.

— Ken Richardson



From left: Evans, Rhino, Dorman, and Caldwell. Above right: the original 3D LP.

the lyrics. Then there's her frank treatment of in-your-face sexuality: she destroys the macho mentality of Steve Miller's "The Joker" and renders it completely feminine. And what she does with the line "I really love your peaches / Want to shake your tree" will make you blush.

Still, lang and co-producer Craig Street go mainly for a serious treatment of love, sex, and addiction. "Don't Smoke in Bed" becomes a metaphor for sexual possessiveness — and for the dangers of promiscuity in the age of AIDS. Likewise, "My Last Cigarette," with the line "Sometimes your drug chooses you," is about summoning the strength to ditch a bad habit, a harmful relationship, a toxic love.

Whether you find *Drag* an object of craving or the ashes of lang's earlier, varied musical incarnations depends on how much you buy into the former country singer's post-twang, torchy persona. Either way, it is an intoxicating puff piece. *A.N.*

BARBARA MANNING: 1212.
MATADOR 221 (56 min).

★★★★★
For a singer/writer with a classic pop sensibility, Barbara Manning has always had a surprising attraction to darker territory. Her last two albums, with the now-defunct band S.F. Seals, were full of attractive, guitar-driven tunes, but a haunting undertone lingered after the hooks snagged you.

Titled after her December 12 birthday, 1212 is her most adventurous album yet, a beautiful song cycle about death, rebirth, and transcendence, but mostly about death. Not many singers would dare cover Richard Thompson's crankiest song, "End of the Rainbow," or Tom Lehrer's mock-grisly "Rickity Tikity Tin," which she does without the mocking. And few pop writers would attempt something as ambitious as *The Aristonist Story*, a suite looking into the psyche of a fire-setter and his disturbed parents.

In short, this is a perfect album for late-

STAR SYSTEM

Excellent ★★★★★
Very good ★★★★★
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POPULAR MUSIC

night catharsis, and the heavy moments are offset by the pop shimmer of the arrangements and by Manning's warm, unguarded singing. Both are put to good use in the most surprising cover, "Marcus Leid," borrowed from the German progressive band Anon Duul II. It's the tune that turns the album's mood around, and you'd never think that a quirky song about Joan of Arc could sound so uplifting. *B.M.*

THE MOMMYHEADS.

DGC 25129 (46 min).

★★★★

I had a chance encounter with the Mommyheads in a New York subway about a decade ago and, finding them to be a vibrant young bunch of guys, had an intuition they'd go far. That they did, relocating to San Francisco. In an artistic sense, they've kept developing to the point where I can tout their major-label debut (and fifth album overall) as a fount of cleanly articulated pure-pop pleasure that simply refuses to budge from my CD player.

Adam Cohen, the band's founder, songwriter, guitarist, and lead voice, hews to the timeless virtues of melody and songcraft while letting some quirks and a brainier-than-usual musicality shine through. He sings in a high quaver that's reminiscent of David Byrne and Donald Fagen. And the band creates lovely, spare soundscapes with evocative brushstrokes: ringing, single-note guitar lines over a shifting base of electric-

piano chords and a supple rhythm section that makes a comely virtue of restraint.



The Mommyheads seem to be rooted in the notion of pop as something that's both ambitious and instantly appealing, something that's accessibly in tune while sounding slightly off-kilter. It's a delicate and difficult balancing act, but it's pulled off here with aplomb. *P.P.*

MICHAEL PENN: Resigned.

57/EPIC 67710 (39 min; enhanced CD).

★★

BLAKE MORGAN: Anger's Candy.

N2K ENCODED MUSIC 10003

(40 min; enhanced CD).

★★

It's unfortunate that Michael Penn called his new album *Resigned*, because it intimates a lack of conviction — which is indeed borne out on much of this record. Flashes of brilliance, most of them arrayed toward the beginning, affirm Penn's sub-

stantial creativity, while the bulk of the album confirms its underuse. The opening song, "Try," demonstrates his knack for brooding, baroque power pop. It's followed by "Me Around," a bit of Beatlesque tunefulness that manages to be both jaunty and downcast, and "Like Egypt Was," a piece of psychotically driven pop that draws you into its acrid mood. The rest of *Resigned* limps along in a cheerless funk whose nadir is "Small Black Box," where a tortured analogy is drawn between a broken relationship and an airplane crash. And the A/V material of this enhanced CD doesn't offer much; the in-studio vignettes are merely flippant, and the section dubbed "Amusement" (card tricks and the like) is an irrelevant diversion.

A newcomer from New York City, Blake Morgan shares with Penn an emotional directness and a love of barbed pop. His debut album, *Anger's Candy*, is longer on promise than delivered goods, although songs like the prickly but involving opener, "Lately," hint at a deeper well of talent that may surface more fully on subsequent recordings. By and large, however, this is a labored effort that never quite finds its footing. Worse, the ECD's multimedia content only makes the album seem colder and more uninvolved than it already is. *P.P.*

TITANIC

(original-Broadway-cast recording).

RCA VICTOR 68834 (73 min).

★★★★

STEEL PIER

(original-Broadway-cast recording).

RCA VICTOR 68878 (74 min).

★★★★

The "disaster musical" may be an emerging trend of the late Nineties. Here we have two freshly minted slices of early-twentieth-century Americana, one depicting the epic shipwreck that burst the bubble of the Gilded Age, the other contemplating the Great Depression via the microcosm of a dance marathon in which dozens of the Crash's victims foxtrot themselves into physical collapse. Both musicals rely heavily on spectacle, but, as distinct from cinematic restagings of these calamities, both use words and music to reflect on the meaning of these events and what they have to say about us as a people.

Titanic, last season's big Tony and box-office winner, is a first-rate musical drama that's only marginally closer to *Carousel* than it is to *Tosca*. Composer Maury Yeston and crew have come up with a Broadway *Gesamtkunstwerk* that illustrates what Andrew Lloyd Webber (and his *Miserables* imitators) had in mind but hadn't the craftsmanship to pull off. Although *Steel Pier* closed even before the cast album could be released, whatever problems the show had were not in its score. Songsmiths John Kander and Fred Ebb evoke the Thirties with snappy thoroughness, from swinging and syncopated numbers to comic operetta. Their songs are more traditionally tuneful than those of *Titanic*. Neither of these two original-cast albums qualifies as anything like a disaster. *W.F.*

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PAUL WELLER: Heavy Soul.

ISLAND 524 277 (41 min).

★★★★

Hheavy Soul is the closest thing to a Jam album that Paul Weller has made since he broke up that great band fifteen years ago. In fact, if the Jam had stayed together after 1982's *The Gift*, which added heavier production and a soul-influenced sound, this is where it might have gone.

Weller has been on the right track since he broke up his disappointing Eighties band, the Style Council, and found a more personal vision of rock and soul. His previous record, *Stanley Road*, reached back to the glory days of English album rock, echoing the sound of Joe Cocker, Humble Pie, and, especially, Traffic. Those influences are still evident on *Heavy Soul*, but he has returned to the Jam format of guitar/bass/drums. The acoustic "Driving Nowhere" and "As You Lean into the Light" prove that Weller's melodic knack is stronger than it was in Jam days, but the title track, "Peacock Suit," and "Brushed" all have a guitar-slinging bravado that recalls his old band.

After the introspective mood of *Stanley Road*, Weller now sounds truly content for the first time on record. Many of the songs are about accepting uncertainty — "I have no solutions, better get used to it" — but by the closing "Mermaids" he's celebrating romance with a boppy, sha-la-la chorus. Good to hear that Weller's happiness has fired him up instead of mellowing him out. *B.M.*

DWIGHT YOAKAM: Under the Covers.

REPRISE 46690 (42 min).

★★★★

Dwight Yoakam loves sneaking a song like Elvis Presley's "Little Sister" into his act, so this album of animated covers isn't such a surprise. What will knock you off your chair, however, is the big-band version of the Kinks' "Tired of Waiting for You," in which a Vegas-ized Yoakam swings like a Jack Jones for the Nineties. What's even weirder is that after the initial shock, he doesn't even sound that odd doing it.

Under the Covers is terrific, its song choices speaking volumes about Yoakam's musical upbringing as well as that of producer/arranger Pete Anderson. Whereas some of the renditions don't alter the structure of the material, others are strip-down-and-start-over remakes. Two cases in point: the Clash's "Train in Vain," recast as near bluegrass with Ralph Stanley on banjo and harmonies, and the Rolling Stones' "The Last Time," in bluegrass overdrive with a Merle Travis-style electric lead guitar.

Yoakam and Anderson are inspired in the album's two standouts, "Wichita Lineman" and "Things We Said Today." Yoakam explores a wider vocal range than ever before in the Jimmy Webb song, and Anderson's brilliant arrangement creates a fresh, exuberant sound, especially with the up-front percussion. The Beatles cut is likewise transforming, by way of a great, swirling electric guitar and Yoakam's insinuating reading of the lyric. Under these covers, he shows a bold interpretive skill that he and Anderson share in spades. *A.N.*

Collection

SEPTEMBER SONGS — THE MUSIC OF KURT WEILL.

SONY CLASSICAL 63046 (69 min).

★★★★

Hal Willner has supervised homages to Thelonious Monk, Nino Rota, the Disney empire, and Kurt Weill. And now, Weill again. *September Songs* involves not only rock-and-rollers like Nick Cave and P J Harvey but also opera singer Teresa Stratas,

jazz vocalist Betty Carter, and the late author William S. Burroughs. Because the cast is so diverse, *September Songs* is even more successful than *Lost in the Stars*, Willner's earlier Weill CD, at establishing the universality of the Weill songbook.

Cave's ravaged "Mack the Knife" takes some getting used to, but it is damn near definitive in its portrayal of murderous decadence. Likewise, Harvey looks through a glass darkly at "Ballad of the Soldier's Wife," and David Johansen steps out of his

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CATALOG UPDATE

Renaissance

At the height of its popularity in the mid-Seventies, Renaissance played to capacity audiences in Carnegie Hall, but the band's progressive rock has since been largely unavailable on CD. Today, however, the catalog is growing. King Biscuit Flower Hour has released the two-part *Renaissance at the Royal Albert Hall with the Royal Philharmonic Orchestra*, recorded in 1977. Also out is *Songs from Renaissance Days*, a set of rarities on the King Biscuit imprint Mausoleum Classix. As for the original studio albums, the American CD rights to *Prologue* and *Ashes Are Burning* are being renegotiated, and Warner Bros., which owns the U.S. rights to the band's Sire albums, has no reissue plans of its own. In England, however, HTD Records has rereleased *Prologue*, *Ashes Are Burning*, *Turn of the Cards*, *Scheherazade and Other Stories*, and the two-CD *Live at Carnegie Hall* (also on audiophile vinyl) as well as the later *Camera Camera* and *Time-Line*. Completists should also know that a U.S. label incidentally called Renaissance Records has reissued *Renaissance* and *Illusion* — the two albums made by the very first lineup, which included ex-Yardbirds — and *Enchanted Caress*, a collection of rarities under that lineup's later name, *Illusion*.

Where is the well-known Seventies lineup now? Bassist Jon Camp has basically been MIA, but drummer Terry Sullivan and keyboardist John Tout have recently talked of returning to the music business. Acoustic guitarist and composer Michael Dunford, who in 1995 teamed with veteran lyricist Betty Thatcher and new vocalist Stephanie Adlington for *The Other Woman* on HTD, has just done unplugged versions of Renaissance songs (plus two new tracks) for *Ocean Gypsy*, also with

Adlington and also on HTD. Meanwhile, Dunford has been working on a *Scheherazade* musical. On the phone from England, he said that five showcase performances are planned for December. He hopes to have a West End opening in late 1998 before reaching Broadway.

Of course, the name most associated with Renaissance is that of its long-time singer, the dazzling Annie Haslam, whose most recent solo album, 1994's *Blessing in Disguise* (One Way), is her best to date. And these days, Haslam is especially active. In addition to projects with Steve Howe and Patrick Moraz, she is planning her next solo record, as well as

benefit shows in Brazil for poor children and adolescents. (A live CD culled from Brazilian performances earlier this year is also expected.) She is currently in the midst of an East Coast tour, including a candlelight concert on December 12 in Montclair, New Jersey, and Christmas shows on December 20 and 21 in Upper Black Eddy, Pennsylvania. (For details, visit Haslam's Web site at <http://www2.epix.net/~haslam>. The best Renaissance site is at <http://user.mc.net/jtl/nlights/index.html>.)

To those who are holding out for a Renaissance reunion, Haslam has three words: "Let it go." Sitting in her rural American home, she told me that "if I turned around and said, 'Let's do it,' everybody would. But I want to move forward." She remains proud of their heritage — "That band was so special with those five people" — and she continues to perform classic material, even unearthing "Spare Some Love" and "Let It Grow" for her current dates. But her own revitalized career signals a genuine new start for the singer. "It's my rebirth," she summed up. "This really is my own renaissance." — Ken Richardson



Renaissance, circa 1974, and Annie Haslam, performing on her current U.S. tour



droll Buster Poindexter persona to inhabit "Alabama" with almost psychotic fervor. Lou Reed reprises "September Song," which he also did on the first tribute, with a wiser and more illuminating interpretation. Elvis Costello revels in the existential reverie of "Lost in the Stars." And the Persuasions deliver a remarkable *a cappella* "O Heavenly Salvation," the haunting funereal hymn from *Rise and Fall of the City of Mahagonny*. In the end, Weill's wonderfully dramatic songs continue to resonate across genres, decades, and generations. P.P.



JAZZ

JOHN CLARK: *I Will*.
POSTCARDS 1016 (54 min).

★★★★★

French-horn players rarely step up front in jazz, but there is often a call for them in the background. John Clark has heeded many calls from the likes of Gil Evans, Carla Bley, McCoy Tyner, and George Russell, but now he steps front and center with *I Will*, a gem that won't soon be forgotten.

Clark's compositions dominate the program. They range from "Bad Attitude," an intricate chamber piece where the instruments engage in a tantalizing dispute, to the mellow and richly textured title tune, where Alex Foster's pleading tenor saxophone and the leader's smooth horn have something mighty pretty to say. Then there are the more familiar tunes like "My One and Only Love," in a beautiful rendition that spotlights Clark's silken horn, and Sonny Rollins's "Airegin," which has Bob Stewart proving just how lithe a tuba can be. An album of shifting moods, *I Will* is an aural kaleidoscope that dazzles the ears. C.A.

CARMEN McRAE: *Sings "Lover Man" and Other Billie Holiday Classics*.

COLUMBIA/LEGACY 65115 (47 min).

★★★★★

The first appearance on CD of Carmen McRae's 1962 salute to Billie Holiday is one of 1997's most essential reissues. For years, this was the album I pulled off the shelf when trying to convince a doubter that McRae at her peak was in the same league as Sarah Vaughan and Ella Fitzgerald.

McRae's voice here was still as pure as it had been on her overproduced Fifties sides for Decca, and she hadn't yet cultivated the mannerisms that made her recordings from the Seventies onward so disappointing. Unintimidated by the prospect of reinterpreting songs already given definitive interpretations by Holiday, she knew the difference between evocation and imitation — summoning up Holiday's ghost fleetingly in a few of the ballads, including "Some Other Spring." McRae's version of "Yesterdays," which she states simply at a slow tempo before taking it up, shows her to have been a

great actress as well as a great singer. And she swings "I Cried for You (Now It's Your Turn to Cry over Me)" and "Trav'lin' Light" from beginning to end, accompanied by a small group featuring trumpeter Nat Adderley and, in solos of erotic aggression, tenor saxophonist Eddie "Lockjaw" Davis.

Lover Man achieves an unfussy perfection that puts McRae's much later RCA tribute to Holiday to shame. Get this one before it disappears again. *F.D.*

CHARLIE PARKER/DIZZY GILLESPIE:
Diz 'n Bird at Carnegie Hall.

ROOST/BLUE NOTE 57061 (73 min).

★★★★★

I give three stars to the sound of these recordings, although Jack Towers and Malcolm Addey have done wonders with the material at hand. But nothing less than five stars will do for the performances by Dizzy Gillespie and a Who's Who of bebop sidemen at Carnegie Hall fifty years ago. On September 29, 1947, bop seemed the way to go, and here were the new music's most potent forces. This was Gillespie's Carnegie debut, and sharing it for five quintet performances was his alter ego, bop cofounder Charlie Parker. It was their first joint appearance since a 1946 date at a Hollywood club, where their relationship was strained by egos and Parker's drug addiction. But if the friction had any effect here, it was a positive one, for both men are eloquent in their solos and mutually supportive. No wonder that sales of bootleg 78s thrived.

The rest of the CD features Gillespie's big band, playing more compositions that were destined to become classics of the bop genre, and his impressive collaboration with George Russell, "Cubano-Be, Cubano-Bop," which the band would record for Victor a couple of months later. Kenny Hagood's witty scat duel with Gillespie on Babs Gonzales's "Oop-pop-a-da" is here as well, adding much to what is essentially an hour and 13 minutes of pure delight. *C.A.*

Collection

BURNING FOR BUDDY —
A TRIBUTE TO THE MUSIC OF
BUDDY RICH, VOL. II.

ATLANTIC 83010 (72 min).

★★★★★

Buddy Rich is honored in superb fashion by a well-oiled big band and eleven drummers, including Steve Gadd, Marvin "Smitty" Smith, Joe Morello, Bill Bruford, Kenny Aronoff, and, from the rock band Rush, Neil Peart, who also produced this volume and its predecessor. Rich himself appears — by way of a 1968 drum track — in "Channel One Suite," a memorial anthem of sorts with vocals by Annie Ross, Domenick Allen, Annette Sanders, and Rich's daughter, Cathy, who also sings "Them There Eyes." Most impressive, however, are the eleven instrumental tracks, with fine statements by saxophonist Steve Marcus, trumpeter Greg Gisbert, trombonist John Mosca, and pianist Jon Werking — and not a single egomaniacal drum solo. *C.A.*

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BILL CHATTIN:**

Five Concerts and a Landscape.

ZINNIA 109 (69 min). 984 Stillwater Rd., Stamford, CT 06902. ★★★★★

Here is a close-knit group that continues to produce splendid chamber jazz but somehow manages to elude the big spotlight. *Five Concerts and a Landscape* was recorded at appearances in and around New York between 1992 and 1995. Pianist Bluth, bassist Messina, and drummer Chattin move authoritatively through a program of nine familiar selections and a Messina original, "The Dean's List." *C.A.*

JULIAN DAWSON:

Move Over Darling.

COMPASS 4243 (47 min). ★★

Britain's Dawson rallies friends Richard Thompson, the Roches, Dan Penn, and Stuart Smith for a low-key collection of neo-folk and blues originals plus some odd covers. He has a raspy whisper that settles easily on the ear, and his star roster helps make this a lovely-sounding record. Still, it never really gets up to speed, and it runs out of gas far too soon. *A.N.*

DR. JOHN: Trippin' Live.

SUREFIRE/WIND-UP 13047 (70 min). ★★★★★

The great Mac Rebennack arrives on his first authorized live album, reprising career-spanning favorites in loose, stretched-out versions that allow for multiple solos from his long-time veteran blues and jazz sidemen. There are slow spots, but by the time he ends the evening with a nearly unrecognizable though exceedingly exuberant "Goodnight Irene," you'll be praying the sun never comes up. *A.N.*

FLEETWOOD MAC: The Dance.

REPRISE 46702 (79 min). ★★★★★

No doubt you've already seen this live reunion several times on TV. Now listen. They can still sing (including Stevie Nicks, except for the highest notes), they can still play, and they can still break our hearts, and their own, with "Landslide" and "Silver Springs." And the four new tracks are all excellent (including Stevie's), especially Lindsey Buckingham's nasty "My Little Demon." Great program, great sound — and that playing time! *K.R.*

**ZIGGY MARLEY & THE MELODY
MAKERS: Fallen Is Babylon.**

ELEKTRA 62032 (59 min). ★★

Despite its Rasta-influenced title track, this is the Melody Makers' poppiest and shallowest record yet. Most glaring is the cover of "People Get Ready"; done at too fast a clip with computerized beats and chirpy backup vocals, it verges on cruise-

ship reggae. The album is heavy on love songs, nice but clichéd messages, and feel-good sentiments. Too much party, not enough consciousness. *B.M.*

DELBERT McCLINTON:

One of the Fortunate Few.

RISING TIDE 1017 (38 min). ★★★★★

On his first new album in four years, Delbert McClinton overhauls his irrepressible brand of roadhouse country-blues with a staggering array of guests, proving two things: nobody else writes with such deadpan humor about the characters who populate every town's juke-joint culture, and nobody ever made such frayed vocal cords sound so fine. *A.N.*

SCOTTY MOORE/DJ FONTANA:
All the King's Men.

SWEETFISH 0002 (37 min; enhanced CD).

★★★

Here's a short, sweet set of old-school rock-and-roll, with former Elvis Presley guitarist Moore and drummer Fontana joined by the proverbial cast of thousands. The liaison with the Band and Keith Richards in "Deuce and a Quarter" is a match made in heaven. Joe Ely and Steve Earle each get the Sun Records-era feel right, and Tracy Nelson showcases her bluesy power in the torchy ballad "Is All of This for Me?" The A/V material includes interviews and studio footage. *P.P.*



CECIL PAYNE: Scotch and Milk.

DELMARK 494 (72 min). ★★★★★

Now 75, Payne plays baritone sax as eloquently as ever, his approach ranging from robust attacks to delicate caresses. There isn't a regrettable moment on this generously timed CD, but there are high points, such as pianist Harold Mabern's solo in "If I Should Lose You," trumpeter Marcus Belgrave's torrid statement in "Que Pasañing," and every time Eric Alexander and Lin Halliday lock tenors. *C.A.*

THE PLANET SLEEPS.

WORK/SONY WONDER 67772

(48 min; enhanced CD). ★★★★★

Lullabies from sixteen countries demonstrate a common thread that connects all cultures: the need to love and nurture our children. The expertly chosen songs also display our planet's fascinating diversity of languages and musical styles. The multimedia content offers notes, lyrics, and a few sight-bites of locations and artists.

William Livingstone



CLASSICAL MUSIC

NEW RECORDINGS REVIEWED BY ROBERT ACKART,
RICHARD FREED, DAVID HALL,
JAMIE JAMES, GEORGE JELLINEK, AND ERIC SALZMAN

HAYDN: Mass No. 14, in B-flat Major ("Harmoniemesse"); Te Deum.

Sandra Piau (soprano), Monika Groop (mezzo-soprano), Christoph Prégardien (tenor), Harry van der Kamp (bass); Choeur de Chambre de Namur; La Petite Bande, Sigiswald Kuijken cond. DELTSCHIE HARMONIA MUNDI/BMG 77337 (52 min).

★★★

The Mass No. 14 and the *Te Deum* are late choral works of Haydn in his last style — grand and festive without rhetoric or claptrap. The "Harmoniemesse" or "Wind Band Mass" — so-called because of the prominence of the woodwinds and brass in the orchestra — was written in 1802 for the name day of the daughter of his patron, Prince Esterhazy. It is Haydn's last completed composition and forms a magnificent close to what was undoubtedly the longest and most fruitfully creative musical career in European music. Put aside any ideas you might have about an old man musing on eternal things; this is music that celebrates life, not the alternative. It also has its share of court grandeur and more than a whiff of the theater — and Haydn, without making the slightest concession, delights in the confusion of styles.

One of Haydn's great abilities, much appreciated at court no doubt, was his skill at getting through all those boring Latin texts with a minimum of mumbo-jumbo and a maximum of musical delight. The original Latin *Te Deum* has enough text to put the entire Esterhazy court into deep sleep, but Haydn manages to turn it into a breathless 8-minute romp in high style.

La Petite Bande sounds anything but pe-

trite in these fast-paced but nonetheless large-scale works. The Belgian ensemble, associated with Gustav Leonhardt and Sigiswald Kuijken from its inception, has established itself as one of the leading early-instrument

ensembles in Europe, specializing in late-Baroque and Classical works. Its collaboration here with the Namur Chamber Choir and a first-rate quartet of soloists is impressive, and the performances are lively, colorful, and beautifully shaped. *E.S.*

KANCHELI: Mourned by the Wind; Light Sorrow.

France Springuel (cello); boys chorus: I Fiamminghi, Rudolf Werthen cond. TELARC 80455 (72 min).

★★★

The titles tell it all: this CD offers 72 minutes of dark, grim melancholy, unrelied by so much as a momentary gleam of hope. The music of the Georgian composer Giya Kancheli, frankly, makes for arduous listening. Nonetheless, it is intensely felt and often brilliantly composed, and those willing to devote the time will find much to reward their concentration.

Light Sorrow is a cantata, with texts from Goethe, Shakespeare, Pushkin, and a Georgian poet named Galaktion Tabidze, sung by two boy sopranos and a boys' choir. They drone the words tonelessly, as if from another world, while the orchestra roils ominously, occasionally erupting in terrifying explosions. *Mourned by the Wind*, subtitled "Liturgy for Orchestra and Solo Cel-

OUT OF THIS WORLD

Leonard Slatkin's new RCA Victor LCD of "space music" with the Philharmonia Orchestra leads off with Edgard Varèse's orchestral blockbuster *Arcana*. The out-of-this-world sonic events in this 17-minute work — replete with howling dissonance, propulsive rhythmic figuration, and occasional delicate interludes laced with sardonic march episodes — makes its discmate, Gustav Holst's *The Planets*, seem like an Edwardian tea party in comparison. Slatkin gives the Varèse a sharply defined reading that makes its mix of passacaglia and rondo elements quite intelligible on repeated hearings. The sound's the thing, however, what with the large array of brass and the six percussion players, complete with string-drum lion's roar.

The Planets gets a sharply articulated treatment, especially in the opening "Mars" movement, which is adamant and mercilessly relentless. The third movement, "Mercury," is, well, mercurial beyond any other performance I have ever heard. The famous "hymn" section of "Jupiter" is broadened out, but not as excessively as in some performances I've heard. The great "Saturn" movement is as haunting as ever, with its sad processional and climactic outcry

sternly controlled. "Uranus," however, is surprisingly tame — not as kooky and grotesque as I'd like. We get a surprise in the ethereal concluding pages of "Neptune," offstage children's voices instead



Leonard Slatkin

of the female choir Holst called for, but it works superbly, adding up to the most unearthly performance of "Neptune" in my experience. *David Hall*

HOLST: The Planets. VARÈSE: Arcana.

Philharmonia Orchestra; New London Children's Choir, Leonard Slatkin cond. RCA VICTOR 68819 (67 min).

★★★

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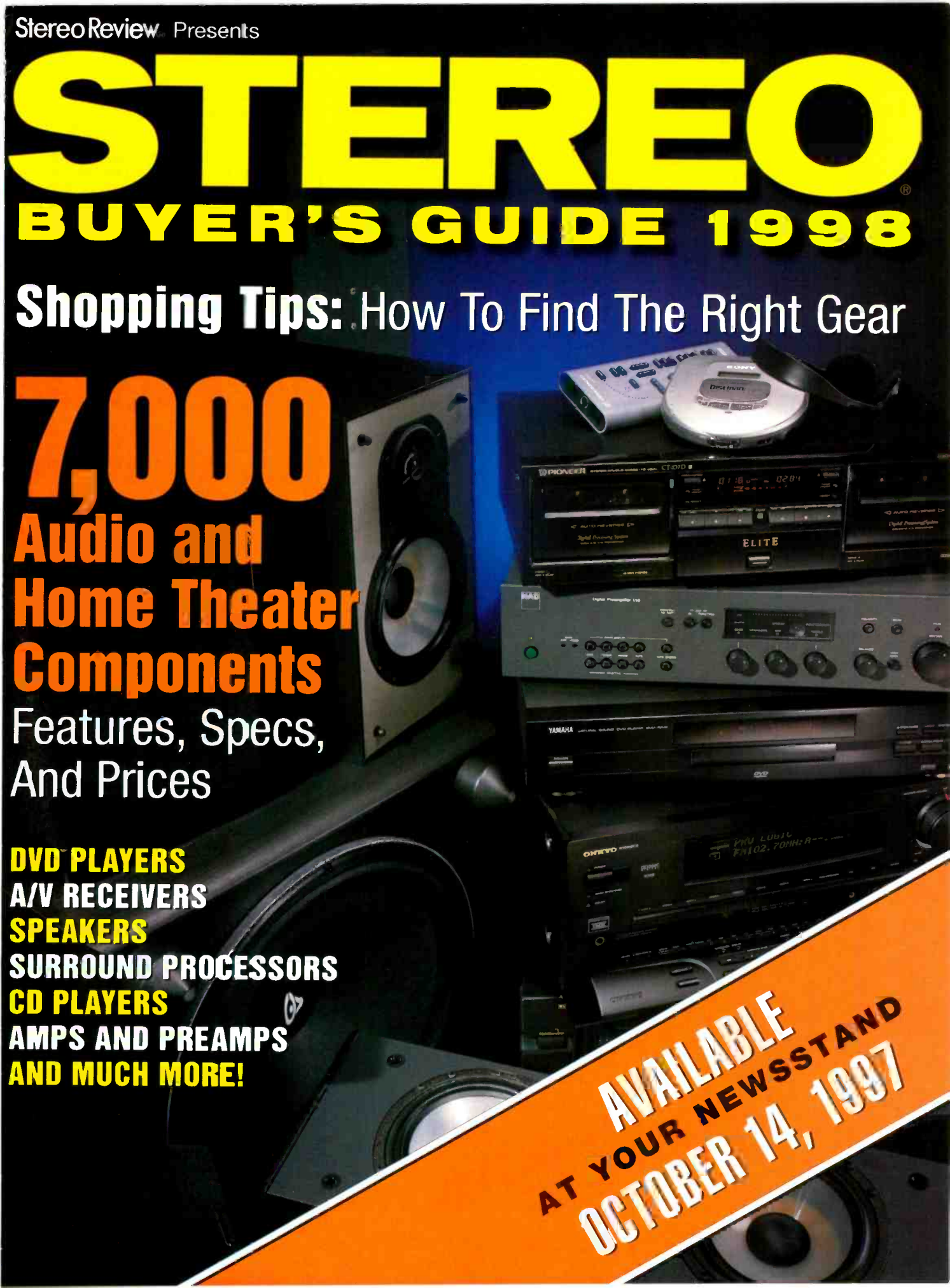
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CLASSICAL MUSIC

lo." is a sorrowful elegy dedicated to the memory of a deceased friend of the composer. The orchestra cushions the keening cello solo, which is movingly built around single steps of the scale. The recording is thrilling in its vivid immediacy, but the dynamic range is so pronounced that Telarc thought it necessary to post a warning on the cover. If you happen to live in a concert hall, this is a model demonstration disc, but if you have a radiator or an air conditioner, or live with someone who breathes, better use headphones. *J.J.*

MOZART: *Il Re Pastore*.

Roberto Saccà (Alessandro), Ann Murray (Aminta), Eva Mei (Elisa), Inga Nielsen (Tamiri), Markus Schäfer (Agenore); Concentus Musicus Wien, Nikolaus Harnoncourt cond. TELDEC 98419 (two CDs, 108 min).

★★★★★

Written when Mozart was 19, *Il Re Pastore* is not a true opera but rather a *serenata*, a small-scaled confection offered as an evening's entertainment. In most cases, there was little action, just sung comment on a particular situation — here the near-loss and subsequent reunion of two pairs of lovers, whose separation had been threatened by the well-meaning attempts of

the king, Alessandro, to bring peace and order to Sidon (Macedonia).

It's pretty tenuous stuff, but Mozart's music transcends the confines of his libretto. One example: Tamiri's joyous aria in Act I, "*Di tante sue procelle*," revealing her love for Agenore, which is splendidly sung by Inga Nielsen. Her performance throughout is well contrasted by the appealing purity of Eva Mei as the more girlish Elisa, who is betrothed to Aminta, the titular young Shepherd King.

Mozart's simplicity, or seeming-simplicity, is revealed in Aminta's vow of fidelity to Elisa, "*L'amerò, sarò costante*," the work's most famous passage. The transparency of the musical line achieved by Ann Murray as Aminta is particularly affecting. Deserving special mention is the dramatic finale of Act I, a duet disclosing the feelings of the two pastoral lovers about to be separated. As Alessandro, tenor Roberto Saccà is amusingly self-satisfied in his aria "*Si spande al sole in faccia*," an example of how Mozart's gentle humor leavens the score. Tenor Markus Schäfer's Agenore, a rather pompous and insensitive Sidonian nobleman, provides satiric commentary on courtly behaviour.

The work was recorded live in Vienna's

Musikverein, justly renowned for its remarkable acoustics. There is a fine clarity in the recording, enhanced by the crisp playing of period instruments by the members of the Concentus Musicus Wien. Nikolaus Harnoncourt conducts with a sure and sensitive hand. The accompanying booklet contains interesting explanatory notes. *R.A.*

MUSSORGSKY: *Dream of the Peasant Gritzko; Khovanshchina, Introduction and Galitsin's Journey; Pictures at an Exhibition (orch. Ravel)*.

New Jersey Symphony, Zdenek Macal cond. DELOS 3217 (56 min).

★★★★★

The New Jersey Symphony Orchestra may not be in the same class as the Philadelphia, Cleveland, or Chicago aggregations, but its players acquit themselves with convincing credibility and spirit in this all-Mussorgsky program under conductor Zdenek Macal.

Dream of the Peasant Gritzko is taken from the composer's uncompleted Ukrainian opera, *Sorochintsy Fair*, and is essentially a highly effective choral-orchestral expansion by Vissarion Shebalin of *A Night on Bare Mountain* in the Rimsky-Korsakov version, which was incorporated into his 1938 completion of that score. This is the first time I've heard it since several LP versions in the 1950s and 1960s. It is mighty stirring stuff, and it's performed here with uninhibited zest by the orchestra and the Westminster Choir alike, with valuable contributions by the bass-baritone Clayton Brainerd.

For some reason, Delos saw fit to place the poetic and familiar Introduction to *Khovanshchina* after the great Act IV entr'acte, here titled "Galitsin's Journey." Anyone who has heard Leopold Stokowski conduct this music, on or off records, will be forever haunted by the overwhelming sadness it conveyed in his hands. Macal and his New Jerseyans come the closest I have heard to matching that achievement.

It is tempting to call Macal foolhardy for tackling the Mussorgsky-Ravel *Pictures at an Exhibition* in competition with recordings by just about every orchestra of note throughout the world. Yet what the performance may lack in ultimate finesse it makes up for in vibrant spirit and expert pacing — "The Hut on Fowl's Legs" is a prime example. The fine sound captured by engineer John Eargle, with lots of oomph and sharp focus, is a major plus. *D.H.*

RAVEL: *Daphnis et Chloé, Suites Nos. 1 and 2; Rapsodie Espagnole; La Valse; Boléro*.

Vienna Philharmonic, Lorin Maazel cond. RCA VICTOR 68600 (75 min).

★★★★★

Lorin Maazel has recorded all this music before, and, with one exception, rather more persuasively than on this disc. The exception is his exciting treatment of the well-worn *Boléro*, which comes across here with unexpected freshness and intensity. The pacing is a bit brisker than indicated in the score, but Maazel makes it work brilliantly.

The Ultimate Diva

Between 1949 and 1974, the soprano Maria Callas recorded thirty-four complete operas, out of the forty-seven in her repertory, plus excerpts from others and several collections of arias. Beginning in 1953, with Puccini's *Tosca*,



Maria Callas

all were done for EMI under an exclusive contract. The label promoted her as "La Divina" in the 1960s, and twenty years after her death in 1977, at 53, the divine Callas still seems to cast her spell.

EMI Classics is commemorating her extraordinary career, and recognizing the

ongoing popular appeal of her recordings, with the release this fall of twenty remastered and repackaged opera sets featuring Callas, plus a CD-ROM version of her 1953 mono *Tosca*, co-starring Giuseppe Di Stefano and Tito Gobbi and conducted by Victor De Sabata, which is still the recording by which every other *Tosca* is judged (and usually found wanting). The CD-ROM, available in both Macintosh and PC versions, contains the complete audio recording, an on-screen libretto with translations in English, French, and German, a synopsis, biographies, photos of Callas and other cast members (albeit from a 1964 production without Di Stefano), and excerpts from video recordings of Callas performing or being interviewed. The complete discography with audio samples is a nice touch (although in one case it played the wrong sample).

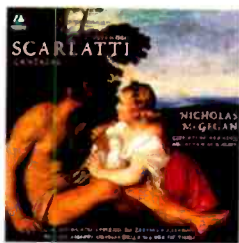
In January the celebration continues with the rerelease of nine opera sets and eleven recital discs, as well as the release of two new compilations, all at midprice, plus full-price issues of two operas available on EMI for the first time, Gluck's *Iphigénie en Tauride* and Verdi's *I Vespri Siciliani*.

All of this great artist's strengths — and, yes, her flaws as well — are there for long-time admirers and new audiences to experience. Even today, Callas continues to enchant, to challenge, and to win new disciples through her recordings. — Robert Ripps

CHRISTIAN STERNER/EMI CLASSICS

and the Viennese players, especially the brass, sound as if they were enjoying their little holiday from Brahms and Bruckner.

Most of the other pieces, in contrast, are taken at tempos noticeably broader than the norm. The *Rapsodie Espagnole*, with its four clearly delineated sections, seems to take this treatment more gratefully than *La Valse* or the second suite of "orchestral fragments" from *Daphnis et Chloé*. Tempo is only one element in readings that, after all, do project a great deal of evocative power, as well as a sense of personal involvement all too often missing from performances we can admire mainly (or only) for their clinical precision. Yet for all the sensuous sound-weaving Maazel brings off, for me his approach to these three works lacks vitality, and there is no scarcity of fine alternative recordings. The *Daphnis Suite No. 1*, however, is both poetic and animated, and the *Boléro*, as noted previously, is downright magical. R.F.



A. SCARLATTI: Cantatas, Volume 1.

Christine Brandes (soprano); Arcadian Academy. Nicholas McGegan cond. CONIFER 51293 (72 min).

★★★★★

Alessandro Scarlatti, who founded a musical dynasty in Italy that proved to be almost as prolific as the Bach family to the north, wrote more than 600 cantatas. More dramatically intense than a song, yet shorter and more compact than an opera, the cantata typically sets a single scene, usually on a classical or bucolic subject, for a solo vocalist and a small instrumental band, making it ideal for private soirées.

Scarlatti wrote most of his cantatas in Rome for a musical and literary salon that came to be known as the Arcadian Academy. Now early-music specialist Nicholas McGegan pays homage with a new series of recordings of a number of the cantatas, performed by an ensemble named after Scarlatti's salon. This first disc is a jaunty, buoyant set of four of them, played and sung with virtuosic panache and lucidly recorded by the Conifer engineers.

The best known of the cantatas here is "Già Lusingato," a ballad about an English soldier taking leave of his wife; the others include a brief, vivid sketch of the myth of Ariadne and a very full version of the Orpheus myth. The latter is a natural choice for the soloist, Christine Brandes. Her soprano voice has a melting, silvery tone, which she produces with effortless grace and eloquence. Her rendition of Orpheus's keening lament for his lost lover Euridice, full of amazingly demanding chromatic melismas, is a particularly virtuosic display

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CLASSICAL MUSIC

of her technical finesse and fine emotional shading — which pretty much sums up what you want from a singer of Baroque music. *J.J.*

R. AND C. SCHUMANN: Songs.

Barbara Bonney (soprano); Vladimir Ashkenazy (piano). LONDON 452 898 (69 min).

★★★★

It is a pleasure to find increased attention paid to the songs of Clara Schumann by current recitalists. Much influenced by her husband, Clara also emphasized brilliant piano writing in her songs, favored effective postludes, and frequently treated the poetic texts arbitrarily, never allowing them to hamper her musical design.

For Robert Schumann's "Widmung," the perfect opening for Barbara Bonney's recital disc, a more substantial (or male) voice may be preferred, but her fresh and girlish timbre proves ideal for most of the material here, particularly Robert's "Mondnacht," delivered with rapt tenderness, and the feathery "Er Ist's," to which she brings an appropriate springtime exuberance. She is



equally perfect in two lighter Clara Schumann songs on texts by Heine ("Ich Stand in Dunklen Träumen" and "Sie Liebten Sich Beide"). At the same time, she captures Robert's "Waldesgespräch" with full awareness of its eerie dialogue, and she brings a variety of dramatic expression to the much-recorded *Frauenliebe und Leben* cycle.

In some instances (Clara's "Er Ist gekommen in Sturm und Regen" and "Lorelei," to name two), Vladimir Ashkenazy, whose pianism commands attention and praise throughout, takes on a somewhat unduly dominating role. His contribution to the success of the recital is nonetheless essential, and his part in Clara's stormy "Lebenszauber," with its fierce repeated chords, is awe inspiring.

Overall, this is a very fine program. Bonney's German is exemplary, and she communicates the poetic essence with clarity and pinpoint intonation. *G.J.*

SIBELIUS: Symphonies Nos. 1 and 4.

Lahti Symphony, Osmo Vanska cond. BIS/QUALITON 861 (76 min).

★★★★

Having recorded several of Sibelius's less familiar works for Bis, Osmo Vanska and his fine little orchestra now set off on a complete cycle of the symphonies. Though its strings are usually augmented for recording, the Lahti orchestra is smallish, probably about the size of those available to Sibelius when he introduced his symphonies. The reduced proportions do

bring certain benefits, mainly in terms of clarity, which helps the listener focus on structural details, and the overall high level of the playing, the genuine commitment from every stand. Sumptuousness, after all, is precisely what is *not* called for in the Sibelius Fourth, and the transparency of the recording itself is superbly apposite to the austere character of this work, insuring maximum impact for the brooding low strings in the opening movement and the chill solitude of the curious finale. There are similar benefits to the beautifully played clarinet solo that opens the First Symphony and the articulation of the timpani theme in its scherzo.

While the entire First Symphony gains in dignity as well as vigor from Vanska's brisk pacing and his straightforward way of shaping a phrase, his Fourth is a good deal more expansive than the norm. The added breadth in the opening movement suits its bleak landscape well enough, but the slow movement is distended to 14 minutes — 2 minutes longer than usual. Momentum tends to sag here, and the emotional climax of the work doesn't quite come off. That is the only real disappointment in either work, but it is quite a critical one. Nonetheless, there is a powerful integrity in these performances, and in the way Bis presents them. *R.F.*

STRAVINSKY: Violin Concerto.

PROKOFIEV: Violin Concerto No. 2.

Itzhak Perlman (violin); Chicago Symphony, Daniel Barenboim cond. TELDEC 98255 (46 min).

★★★★

The performance of the Stravinsky Violin Concerto is full of verve and character, thanks in no small measure to the hand-in-glove collaboration of Daniel Barenboim and his Chicagoans with soloist Itzhak Perlman. This music can be made to sound pretty straitlaced in its Neoclassical way, but Perlman's nimbleness, wit, and warmth are totally disarming. The sound of the live concert recording from fall 1994 is fine and dandy.

While Perlman has recorded the Stravinsky only once before (with Ozawa and the Boston Symphony in 1980 for Deutsche Grammophon), this is his third time around with the Prokofiev Second Concerto. He displays great intensity in the lovely slow movement and dazzling virtuosity in the finale. The sound of the May 1993 recording, also made live in concert, is okay, even with Perlman very much front and center, but there is some unusually obtrusive room noise (air conditioning?) at the start. Moreover, this performance is identical to the one on a 1993 Erato CD, where it is paired with the Mendelssohn Violin Concerto. And the Teldec CD times out at a measly 46 minutes; the decidedly more generous recordings of the Stravinsky by Cho-Liang Lin (Sony) and Kyung-Wha Chung (London) include *both* Prokofiev concertos. *D.H.*

TAN DUN: Symphony 1997

(Heaven, Earth, Mankind).

Yo-Yo Ma (cello); Imperial Bells Ensemble of China; Yip's Children's Choir; Hong Kong

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MUSIC FOR AN AUDIENCE

The American composer Lowell Liebermann (born 1961) has been demonstrating that it is still possible to write music that audiences actually like to hear without condescending, "dumbing down," or compromising creative standards or individuality. Liebermann was the youngest and least known of the three composers from whom the Steinway Foundation commissioned concertos for the inaugural concert of its 21st Century Piano

Rachmaninoff and Liszt, yet was in no sense a bag of clichés or a rejection of contemporary language. Its muscularity and drive appeared neither sardonic nor belligerent, but seemed to be manifestations of a definitely upbeat vitality.

The pianist on that occasion was Stephen Hough, who had given the première of Liebermann's First Concerto in 1988 and is a pre-eminent champion of his music. His participation in the Hyperion recording of both concertos, with the composer conducting the BBC Scottish Symphony, is an assurance of authenticity in the most meaningful sense, involving wholehearted commitment and the most thorough preparation on everyone's part. Both the First Concerto — a more concise and somewhat more darkly colored work in three movements, the last an especially imaginative "Maccaber Dance" — and the Second receive absolutely glorious performances. Liebermann, an experienced conductor, clearly knows how to get exactly what he wants from the orchestra, which for its part responds with both confidence and apparent enthusiasm.

Hough, who also contributed the comprehensive annotation, fills out the disc with six of the eighteen solo pieces that make up the *Album for the Young* that Liebermann assembled in 1993, among them homages to Fauré and to Alkan, an ostinato in the spirit of Satie, and "Starry Night," the piece on which Liebermann subsequently based the love duet in his opera *The Picture of Dorian Gray*. None of these is as long as 2 minutes; like the concertos, they are recorded with exemplary and full-bodied realism. *Richard Freed*

LIEBERMANN: Piano Concertos Nos. 1 and 2; Album for the Young (excerpts).

Stephen Hough (piano); BBC Scottish Symphony, Lowell Liebermann cond. HYPERION 66966 (56 min).

★★★★

here is an amazing array of sixty-five bells, more than 2,400 years old, that were recovered in 1978 from a princely Chinese tomb along with more than a hundred other instruments of the period, all in a perfect state of preservation. Tan's score marks their first significant modern use and as such is both a musical and a sonic tour de force.

The opening "Heaven" section features children's choir and *bianzhong* in five contrasting episodes, preceded by a shorter version of the "Song of Peace" that concludes the entire work (both versions feature Ma's cello). "Heaven" climaxes in a vivid evocation, using sampling techniques, of Chinese opera on Hong Kong's Temple Street — a

marvelous babel of sounds. The music drifts between Chinese and Western idioms, and there's a clear reference to the "Ode to Joy" in Beethoven's Ninth Symphony. I sensed something of the old "socialist realism" aesthetic both here and in the concluding "Mankind" section, which comprises a "Lullaby" and the concluding "Song of Peace" apotheosis. It is the middle section, "Earth" (comprising "Water," "Fire," and "Metal"), that contains the most original and vital music, and in it Ma exhibits prodigies of virtuosity using traditional Chinese and Mongolian fiddle techniques. He is also at his eloquent best in the opening and closing segments, and his extended cello solo in the "Lullaby" is genuinely moving.

The *bianzhong* was recorded in the museum where it is kept in Wuhan, China, the 300-strong children's choir and the Hong Kong Philharmonic in Hong Kong, and Ma in Mechanics Hall in Worcester, Massachusetts. How's that for technology! Yet the result comes off surprisingly well under the composer's direction, adding up to a singular, entertaining, and often stirring listening experience. *D.H.*

TCHAIKOVSKY: Variations on a Rococo Theme; Eugene Onegin, Lensky's Aria; Nocturne; Andante Cantabile; Souvenir de Florence.

Mischa Maisky (cello); Orpheus Chamber Orchestra. DEUTSCHE GRAMMOPHON 453 460 (73 min).

★★★★

Using the standard Fitzenhagen edition, which omits the eighth variation and changes the composer's original ordering, the cellist Mischa Maisky makes the best possible case for Tchaikovsky's engaging Rococo Variations, offering a beguiling mix of volatility and finesse. His handling of the treacherous harmonic for the solo instrument is perfection, elegant to the last degree. In the famous *Eugene Onegin* aria and the lovely Nocturne, Op. 19, No. 4 (originally for piano but here arranged with a lovely flute obbligato), Maisky displays his mellifluous tone to fine advantage. The sentiment becomes a bit overripe in the always lovely *Andante Cantabile* arranged from the String Quartet No. 1, but by and large all of the solo-cello work on this CD falls lightly on the ear.

Maisky, however, plays no role in the *Souvenir of Florence*, a late work composed for six top string players of the St. Petersburg Chamber Music Society. Nowadays it is often heard in string-orchestra guise as in the present version. The music is not especially Italianate in flavor, but it is fine vintage Tchaikovsky. A vigorous waltz with a contrasting lyrical episode is followed by a serenade-like slow movement with a restless middle section. The third movement's Russian dance elements are overlaid with an edgy, anxious aura. The finale is taut and brilliant, with finely crafted fugal textures leavened with a fine "big" tune. The Orpheus Chamber Orchestra players acquit themselves splendidly here and elsewhere, and the recording benefits throughout from the sonic excellence of the State University of



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Project at the Kennedy Center in Washington in 1992. Each was played by a different soloist with the National Symphony under Mstislav Rostropovich.

The unabashed romantic exuberance of Liebermann's four-movement Second Concerto, with a wickedly playful little scherzo and a similarly brief and energetic finale framing the striking pas-sacaglia slow movement, made it the clear audience favorite. Here was music, brilliantly idiomatic in the writing for both piano and orchestra, that embraced the tunefulness and vivid coloring of

Philharmonic, Tan Dun cond. SONY 63368 (72 min).

★★★★

The 40-year-old Tan Dun was born in China but has lived in the U.S. since 1986. His most ambitious work to appear on CD thus far is the *Symphony 1997 (Heaven, Earth, Mankind)*, composed to commemorate the July 1 reversion of British-ruled Hong Kong to the People's Republic of China. The cellist Yo-Yo Ma plays a major role: his solos link the first and last parts, and he is the protagonist in the central part ("Earth"), a concerto for *bianzhong*, cello, and orchestra. A *bianzhong* is an array of tuned bells, and the one heard

New York's Performing Arts Center at Purchase, New York. *D.H.*

Collections

ROBERTA ALEXANDER AND DAVID TRIESTRAM: With You.

Roberta Alexander (soprano): David Triestram (piano). ETCETERA 1190 (59 min).

★★★★★

Flawlessly performed by a couple of pros, this fine new collection of Broadway songs will transform your living room into a chic, sophisticated nightclub. Soprano Roberta Alexander and her partner, pianist David Triestram, offer the exquisite sentiment of Alec Wilder in such wistful ballads as "Blackberry Winter" and "Good-Bye, John," both written for cabaret legend Mabel Mercer, and the brilliant, brittle humor of early Sondheim in numbers like "Can That Boy Foxtrot!" Cut from the original production of *Follies*, it gives Alexander a chance to wring every drop of risqué irony from the lyrics.

She is a distinguished opera performer and lieder singer, but she doesn't let that get in her way. She molds and shapes the tender ballads with unerring taste, never lapsing into the plummy grandeur that mars so many collections of this kind. The program is expertly chosen and well paced. Just when the mood is on the verge of moping, it shifts to a humorous number, such as Tom Lehrer's outrageous "Poisoning Pigeons in the Park" or Shire and Maltby's ingenious "Crossword Puzzle," in which a woman ruminates about her lost love while trying to solve the puzzle in the Sunday paper.

For all Triestram's virtuosity at the keyboard — he races with perfect poise through the fiendishly difficult boogie-woogie in Bernstein's "I Can Cook, Too" — he's obviously much more than an accompanist. The very pleasant voice he reveals in a short duet with Alexander in another Bernstein number, the heartbreaking "Some Other Time," left me wishing he'd been given a bit more to do vocally. The recording is just as intimate as the mood: this is a CD to play at the end of a perfect evening. *J.J.*

CARMINA BURANA.

Boston Camerata, Joel Cohen cond. ERATO 14987 (73 min).

★★★

What we have on this CD is *not* the famous Carl Orff work but an imaginative reconstruction of some of the racy originals from the thirteenth-century Bavarian manuscript that Orff used as his source. The very secular texts are in medieval Latin, German, French, and Provençal, sometimes all at once. The subjects include all the possible sins: gluttony, gambling, drunkenness, avarice, hypocrisy, corruption, injustice, and, above all, lust. Even in their jumbled, multilingual form, the texts can be figured out with some assurance; not so the music. Some of the poems carry little scribbles above the words that suggest musical notation, but their exact musical meaning is not always obvious.

To make the songs performable, the Boston Camerata's director, Joel Cohen, adapted well-known melodies from other, better sources — including Gregorian chant — that were suggested by the texts or otherwise seemed appropriate. The arrangements for solo and ensemble voices, with members of the Harvard University Choir joining the singers of the Camerata, include a generous use of period instruments, and to my ears (and in spite of disclaimers) the lively performance style owes something

to Orff. I had a little trouble with some of the trumpet fanfares and cascades of small bells, and there is one song that has an intrusive white-noise effect that may be some kind of incomprehensible technical glitch. Aside from those few odd touches, these are very likable performances. *E.S.*

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QUICK FIXES

BACH: Two-Part Inventions; Sinfonias (Three-Part Inventions); Four Duets.

Peter Serkin (piano). RCA VICTOR 68594 (71 min). ★★★

Anyone who studies classical piano knows the Bach Two-Part Inventions and the Sinfonias (or Three-Part Inventions) as brief, ingenious keyboard studies for beginners that are, with a few exceptions, more engaging to play than to listen to. The lesser-known keyboard duets — in effect, longer and more highly developed inventions — represent Bach at his most masterly and inspire high-quality playing from Peter Serkin. Among the inventions, only the longer, minor-key, chromatic pieces evoke equally expressive performances; most of the rest is merely smooth, knowing, and decorative. *E.S.*

BEETHOVEN: Piano Concertos Nos. 3 and 4.

Jos van Immerseel (fortepiano); Tafelmusik. Bruno Weil cond. SONY 62824 (69 min). ★★★

Jos van Immerseel plays a beautifully preserved Tröndlin fortepiano, made in Leipzig at just about the time these concertos were introduced, and he takes a fairly conventional interpretive ap-



proach: no mincing phrases, no clunky articulation, no eccentricities of any kind, and there's real give and take between him and conductor Bruno Weil. Exceptionally natural sound, too. *R.F.*

RACHMANINOFF: Piano Concertos Nos. 1 and 2.

John Lill (piano); BBC National Orchestra of Wales. Tadaaki Otaka cond. NIMBUS 5511 (65 min). ★★★

John Lill's renditions of Rachmaninoff's first two piano concertos (he has also recorded the other two for Nimbus) are authoritative, if a bit on the deliberate side, and marked by sensitivity in the slow movements and ample virtuosity elsewhere. Tadaaki Otaka and the BBC Welsh players provide superb collaboration that is matched by richly detailed sonics. *D.H.*

Roy Goodman (harpsichord); the Hanover Band, Roy Goodman cond. RCA VICTOR 61903 (58 min).

★★
Sans Souci was Frederick the Great's country retreat near Berlin (the name means "carefree"). The king was himself an excellent flutist and a capable composer, and he surrounded himself with a first-class musical establishment, including Carl Philip Emanuel Bach, Johann Joachim Quantz (his personal teacher, composer, and music director), and Carl Heinrich Graun (head of the newly founded Berlin Opera). Johann Philipp Kirmberger, best remembered as one of J. S. Bach's pupils (he collected and edited Bach chorale arrangements) and an academic theorist, is represented here by a completely unacademic Symphony in D Major in an up-to-date and extremely lively Italianate style. The Quantz Concerto for Flute, Strings, and Continuo in G Major — one of more than 300 concertos that he wrote for the king to play — is typical of his perky, sophisticated, carefree style.

The two arias by Graun are disappointing, routine *opera seria* imitated from the Italians; neither Nathalie Stutzmann, one of our greatest contraltos, nor conductor Roy Goodman can figure out what to do with them. The excellent Hanover Band fares better with the instrumental pieces, and the best of these is the C. P. E. Bach Concerto for Oboe, Strings, and Continuo in E-flat Major. For two movements, at least, it transcends the merely carefree and reaches a deeper level of expression. *E.S.*

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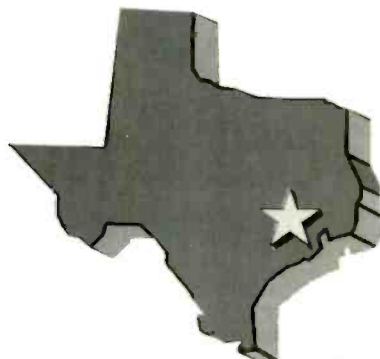
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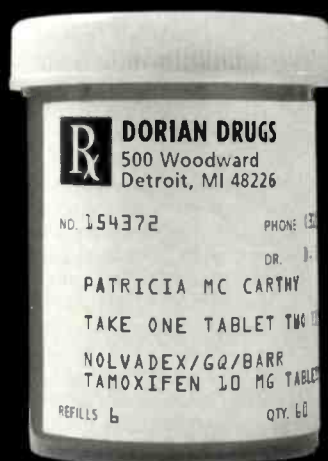
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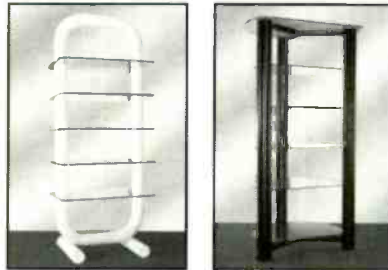
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THE HIGH END

COREY GREENBERG

Ich Bin ein Funkaustellunger

I'm e-mailing this column from Berlin, having spent the better part of a week here for the International Funkaustellung, or IFA for short. Funkaustellung is kind of like our yearly Consumer Electronics Show (CES) held in the U.S., except that they hold it every other year and the humble bratwurst replaces the Dove bar as the most popular concession item. It's also longer than CES, running a whopping nine days, from August 30 to September 7. The IFA is far and away Europe's largest consumer-electronics show, with more than half a million consumers attending. It's a good thing. The show runs nine days!

This was an interesting show for me because I'm used to trade shows being primarily for, well, the *trade* — dealers, distributors, and the press. But even though over 5,000 members of the international press were expected to attend IFA this year, the show really isn't about the trade hobnobbing with itself. I attended the opening day, which was billed as "Press Day," and found that it was pretty much "We're Still Setting Up Our Booth but Feel Free to Gawk and Be Largely Ignored Day." Unlike CES or the CEDIA (Custom Electronic Design and Installation Association) home-theater/custom-install expo, Funkaustellung is all about consumers. And specifically European consumers, who are very different from you and me, and I don't just mean in terms of hygiene and funny-sounding words for "hot dog."

See, the European hi-fi market is about five years behind America in terms of evolution and trends, and in some ways I think it's always going to be different from the U.S. market. For instance, I got the impression that a component's looks are far more important over here than its sound quality, which would explain the proliferation of truly gorgeous yet sonically hideous European speakers that the people over here seem to go for. I didn't hear a lot of good sound, but I sure did see a lot of shiny chrome woofer-mounting rings set against beautiful blond wood. And, in keeping with long-time German loudspeaker tradition, they seem to like enough treble over here to sear a tuna steak.

But the biggest difference between

where we're at and where the European market is at is home theater. We're probably in Year 5 of the U.S. home-theater boom, and, as a result, the concept is no longer a strange and new alternative to the old stereo hi-fi scenario but rather the accepted norm among audiophiles and the general public alike. But in Europe, home theater and surround sound are very new and very small. Of the half-dozen halls devoted to audio at Funkaustellung, only one small adjoining hall was given over to home theater, and even then the demonstrations were more about large PA-style speakers set in each corner of the demo theater than about the concept of using multiple, conventional-size speakers to reproduce movie soundtracks in a typical living room.

It's not just the Germans — I've read the British home-theater mags, like *What*

The biggest difference between where we're at and where the European A/V market is at is home theater. Home theater and surround sound in Europe are very new and very small.

Home Cinema? and *Spam Spam Home Theater and Spam*, and they don't get it, either. Just as the U.S. market went through an initial period of total confusion about the best way to do home theater, the demos at IFA indicated a state of home-theater infancy that made me feel like a time traveler come to help steer the Euros past the mistakes we've already made. People of Europe, I have come from the future to warn you: If an American comes over and starts talking about how passive surround processors are better than active ones, shoot. Shoot to kill. Trust me on this one.

Surprisingly, big-screen TVs were AWOL at IFA. I didn't know that big-screen TV was a peculiarly American thing, but I guess it is — although there were many widescreen 16:9 sets scattered all over the show. I didn't see a single rear-projection TV anywhere. The few displays larger than 27 inches were either prototype wall-mounted plasma displays

(including an exceptionally impressive model from Thomson) or LCD projectors. What the Euros seem to be much more interested in is the *color* of their TV sets — the big thing at Funkaustellung was brightly colored TVs in candy-apple reds, greens, blues, and yellows. A few companies took the color thing a step further and had custom air-brushed finishes that looked like something out of East L.A., while Grundig showed a floor-standing all-in-one hi-fi system that looked for all the world like a robot butler and featured a rainbow of colored finishes all the way up to a flashback-inducing spin-art finish. "Would Master Leary like me to play Quicksilver while I draw his bath?"

Still, I have to hand it to the Germans. Getting so many people to come out to a consumer-electronics show that doesn't feature an appearance by David Hasselhoff is no mean feat. How do they do it? A clue might be found in Grundig's choice of an entertainment event to draw people to its hall. Determined to dispel any remaining notions that all it does is build shortwave radios in a factory somewhere deep in the Black Forest, Grundig set up a small stage in the center of the hall with a bluesy Hammond organist, a drummer, a couple of horn players, a gangsta rapper (and you haven't lived a full and varied life until you've seen a blond German kid doing LL Cool J and sounding like MC Colonel Klink), a unicyclist, a juggler on

stilts, and a pair of mouth-watering go-go dancers in orange hot pants. I never dreamed that you could combine organ-trio jazz with circus juggling, go-go dancing, and gangsta rappenstruedel, but I'm telling you, those Germans pulled it off. And how!

Did this jazz-rap-circus-à-go-go have anything to do with Grundig, its products, or the state of European consumer electronics? Not in the slightest. But I do know that half a million Germans packed the huge Messe Berlin convention center for over a week, and that only a few more than two thousand Americans saw fit to attend a recent open-to-all hi-fi show in San Francisco. Why can't the U.S. consumer-electronics industry get more than a handful of American consumers to come to a hi-fi show? As the Germans would probably tell us, we need to put a little more funk in our stellung. □

“...by a wide and clearly audible margin, the Micro90t is the best small-satellite home theater speaker system I have ever reviewed.”

—David Ranada, *Stereo Review*, February 1997

Boston Acoustics Home Theater Options

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Big theater sound from small, sculpted satellites.

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Lynnfield VR™

Audiophile sound with the full impact of Dolby® Digital.

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Add the tonally matched Micro90 center channel and either direct or diffuse-field surrounds and you've got a system that beats all other satellite home theaters "by a wide and clearly audible margin." You can test-listen the Micro90t at your local Boston dealer. But rest assured, you won't be the first to listen with a critical ear.



This Micro90t home theater system includes: Two Micro90 satellites, sonically matched center channel, powered subwoofer, and a pair of VRS Micro diffuse-field surrounds (available separately).

Boston Acoustics

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