

# Stereo Review

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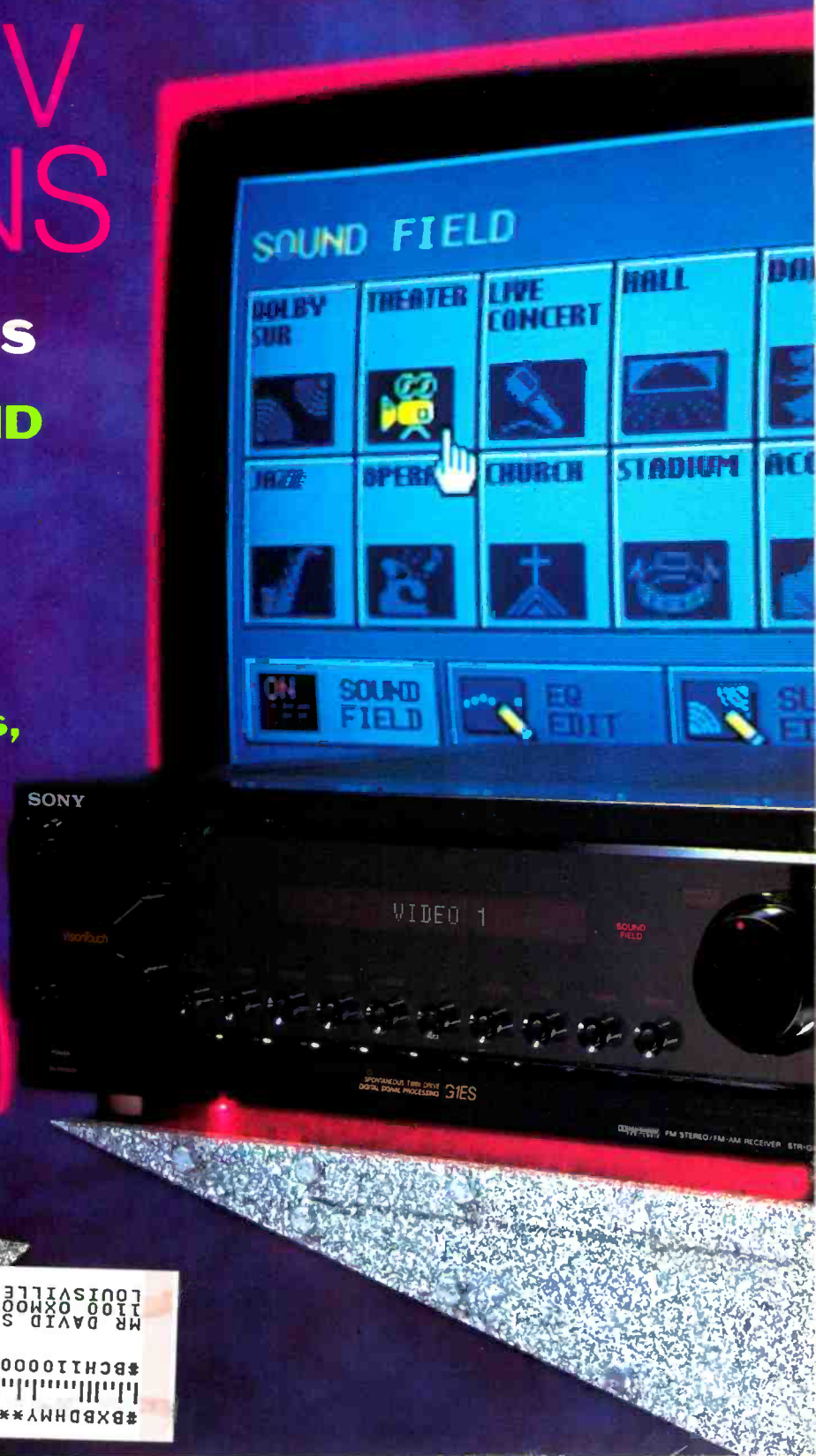
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NEON, THE  
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# Hi.



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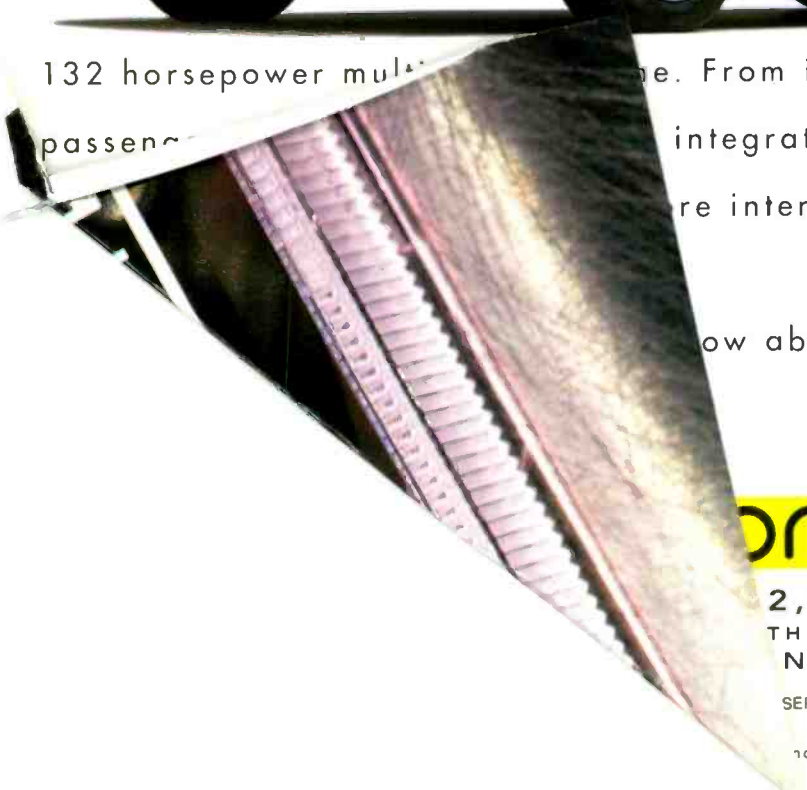
The new Neon's headlights are more than cute. They're halogen. With specially-designed reflectors. Their

lenses are made up of dozens of tiny prisms designed to concentrate and better direct the light. And they're made of a durable polycarbonate material like you'll find in motorcycle helmets.

Keep looking and you'll see lots of other things that make Neon shine. From its six-layer paint job that resists fading and stone chips, to its



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**Cover**

Today's audio/video receivers offer a staggering array of sophisticated features and control options. Sony's STR-G1ES VisionTouch, for example, displays menus on a TV screen (shown here, the Panasonic 31-inch CT-31XF50): a one-button remote controls selections. See page 68 for more.

Photograph by Jeffrey Krein

**BULLETIN** ..... 6  
**LETTERS** ..... 8  
**NEW PRODUCTS** ..... 15  
**PERIPHERALS** ..... 20  
**AUDIO Q&A** ..... 24  
**TECHNICAL TALK** ..... 37  
**POPULAR MUSIC** ..... 86  
**CLASSICAL MUSIC** ..... 96  
**TIME DELAY** ..... 112

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# Stereo Review

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## EQUIPMENT

**Car Stereo** ..... 28

In the lab and on the road with Panasonic's CQ-DC1 DCC tuner  
*• by Ken C. Pohlmann*

**Equipment Test Reports** ... 40

Carver CT-29v A/V tuner/preamp, page 40  
 Marantz CD-63 CD player, page 44  
 Audio Alchemy DAC-in-the-Box digital-to-analog converter, page 48  
 Phase Technology 7T speaker, page 54  
 Snell Type D speaker, page 57

**Sampling Speakers** ..... 61

How to put some method in the madness of speaker shopping • *by Robert Long*

**Dealer's Choice** ..... 66

Bass-ic instinct for audio and video  
*• by Rebecca Day*

**A Guide to A/V Receivers** .. 68

Today's receivers will do just about anything you want—except pop the corn • *by Daniel Kumin*

**Surround Sound for Music** . 74

A home theater system can be good for more than just movies • *by E. Brad Meyer*

**You Still Don't Get It?** ..... 77

Making sense of six slippery audio concepts • *by Ian G. Masters*



▲ Page 66

▼ Page 61



▼ Page 81

## MUSIC

**Best Recordings of the Month** ..... 81

Bill Lloyd's power pop, Matraca Berg's blues, Günter Wand's lively Beethoven, and Skip Sempé's bold, jazzy Bach

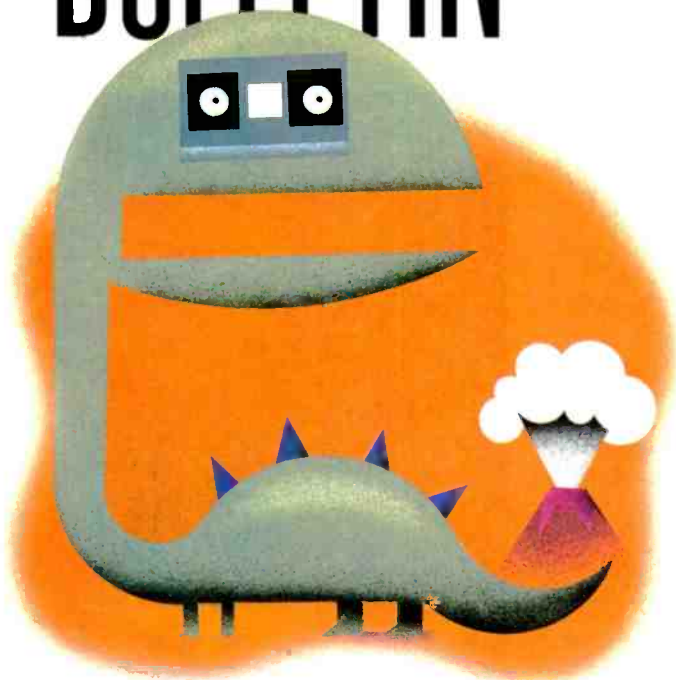
**Center Stage** ..... 104

The Tokyo String Quartet, twenty-five years young • *by Herbert Kupferberg*



# BULLETIN

BY WILLIAM LIVINGSTONE  
AND BOB ANKOSKO



## TAPE MAKES "ENDANGERED SPECIES" LIST

Audio and video cassettes will be "as dead as a door nail" within a decade, predicted magnetic-media expert Laurence Lueck at a recent gathering of the International Tape/Disc Association, an industry trade group. Both Lueck and AT&T vice president John Bermingham declared that the trend in recording media is toward large-capacity versions of the solid-state memory chips now used in telephone answering machines.

"I believe magnetic media is now an endangered species," Bermingham said, noting that even optical discs represent only an interim solution before the onslaught of solid-state devices with no moving parts. Smart cards containing a fingernail-size IC capable of storing 30 minutes of digital audio will be available in about fifteen years, he predicted. But Norris Communications of Poway, California, which plans to market the \$200 Flashback solid-state voice recorder in July, is working on a much shorter timetable: It hopes to unveil a prototype device later this year that has no moving parts and is capable of recording 75 minutes of music.

## BOOKS

The 1994 edition of the *Consumer Electronics Product Terminology Dictionary* is available for \$4.50 from the Electronic Industries Association. Call 202-457-4986 between 9:00 a.m. and 4:00 p.m. Eastern time to order, or write to the EIA/CEG at 2002 Pennsylvania Ave. NW,

Washington, DC 20001-1813. . . . Pioneer is offering free copies of *Understanding Audio and Video*, a 180-page book written in 1989 by Michael Riggs, now Executive Editor of STEREO REVIEW. To get your copy, call (800) 746-6337. . . . *Build Your Own Home Theater*, a 200-page do-it-yourself guide, is available

from Sams Publishing for \$16.95 plus shipping. Call 800-428-5331 to order. . . . George Jellinek, an esteemed vocal critic and a STEREO REVIEW contributor, has published *History Through the Opera Glass*, a view of 2,000 years of human history and the lives of such figures as Cleopatra, Attila the Hun, Charlemagne, and Mary Queen of Scots as depicted in 150 operas. Available for \$35 (plus \$2 postage) from PRO/AM Music Resources, 63 Prospect St., White Plains, NY 10606. . . . The singer/songwriter Marshall Crenshaw, who played Buddy Holly in the film *La Bamba*, has written *Hollywood Rock, A Guide to Rock 'n' Roll in the Movies* (HarperPerennial, \$15).

## VIDEO CD UPDATE

Technics has announced plans to introduce a mini-component system this fall that incorporates a Video CD player. Dubbed the SC-VC10, the complete system recently hit store shelves in Japan with a price tag of about \$1,200. MCA Music Entertainment said it will support the new format. Technics and MCA are both owned by Matsushita.

## TOGETHER AGAIN

The surviving Beatles may or may not get together for new concerts. Bruce Springsteen, Reba McEntire, Billy Joel, and Salt n' Pepa may or may not appear jointly in a concert honoring Elvis Presley this year. But the three tenors—José Carreras, Plácido Domingo, and Luciano Pavarotti—and the conductor Zubin Mehta, whose concert in Rome in 1990 became the best-selling classical audio and video recording of all time, are set to repeat that success at Dodger Stadium in Los Angeles on July 16, 1994, the eve of the World Cup soccer championship game. Dodger Stadium seats a mere 56,000, but the event will be carried on a global broadcast

expected to be the largest in the history of television and radio, reaching more than 1 billion people. The audio recording of the concert will be released in the U.S. on the Atlantic label and the home video on Teldec.

## AUDIO NOTES

Two unusual-looking bookshelf speakers that Canon has been selling in Europe for the past couple of years will now be available here. The mushroom-shaped S-30 and S-35, which will sell for about \$350 and \$450 a pair, respectively, employ a patented design that is said to widen the stereo image. . . . Kenwood is working on a moderately priced line of THX-certified speakers. The first model, the \$399 SW-X1 subwoofer, should be in stores by the time you read this.

## FEEL THE MUSIC

You don't necessarily need a big subwoofer anymore to feel the music. Aura Systems of El Segundo, California, has introduced the Interactor, a \$90 plastic vest with a built-in electromagnetic actuator that creates body-pulsating vibrations when it's connected to the audio output of a video-game system, TV set, or audio system. The vibrations can be adjusted from a "feather touch to intense pounding," according to Aura. Good news for fans of Snoop Doggy Dogg and *Mortal Kombat II*.

## TALKING CAR NAVIGATOR

Eclipse recently demonstrated a prototype navigation system, called Voice Activated Audio Navigation (VAAN), that asks the driver to spell aloud the name of his destination, then calculates the best route and provides step-by-step oral instructions on how to get there. The CD-based in-dash system is expected to be available late this year for less than \$600. □



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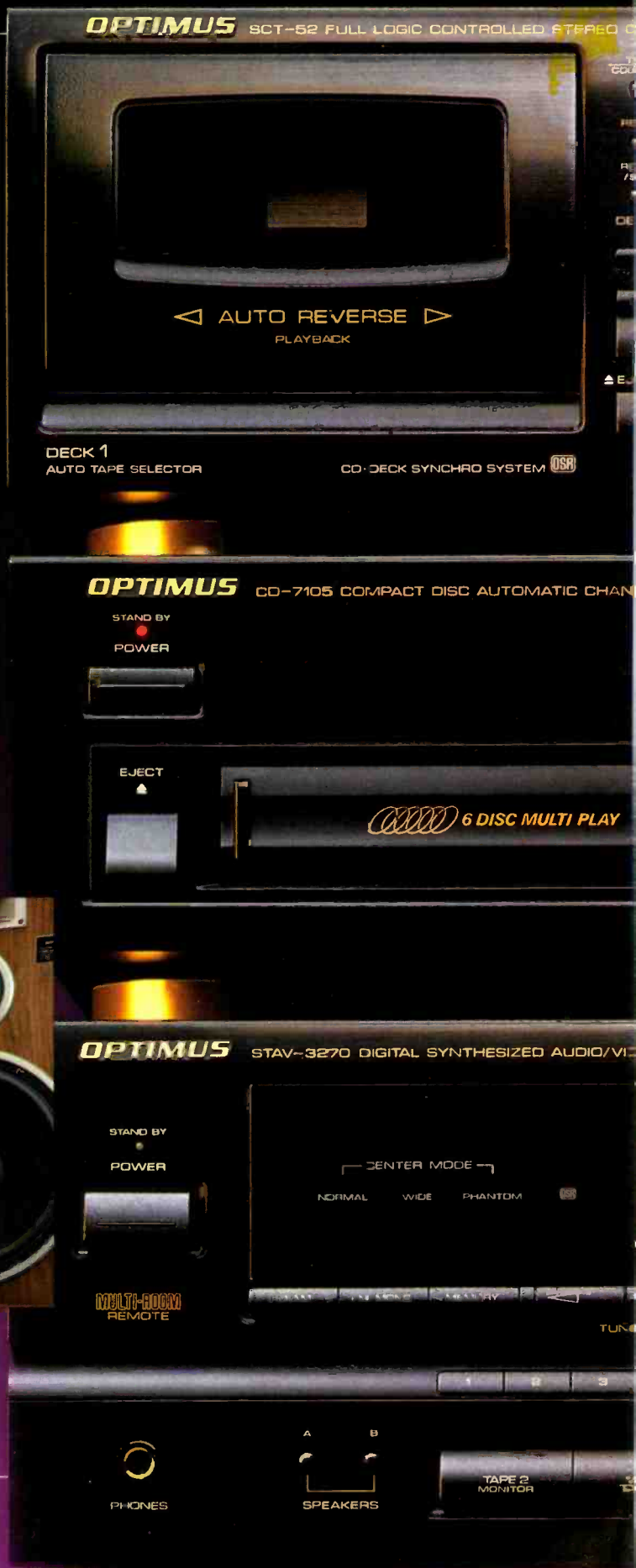
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# LETTERS

## Equipment Prices

The price of good stereo equipment has risen dramatically over the past decade. In order to own an excellent system today, you may have to spend more than \$2,000. To me this is a waste. New technology is coming out as fast as we can buy the products. To keep up with the market, you may have to spend \$5,000 to \$10,000 a year. Are we paying too much just to listen to music?

MARK RISCHBIETER  
Aiken, SC

*Average prices have actually come down some over the last decade, if you adjust for inflation and base the comparison on the amount of money required to achieve a given level of performance. (Look at what CD players sold for in 1984.) The very best equipment available is perhaps more costly, but in that case you're paying more for higher performance. A surround-sound home theater system also costs more than a two-channel system of similar quality, but you're getting something that really wasn't available ten years ago. Whether it's worth the extra money is up to you. As for "keeping up with the market," few people would consider that necessary on an annual basis. The technology moves quickly these days, but not that quickly.*

## Compatibility

I am in the process of installing a home theater in my basement, but after reading Tomlinson Holman's article on Home THX in April, I find myself on hold. I planned on using the Pioneer Pro 107 rear-projection TV, a Yamaha DSP-A2070 A/V amplifier, a Pioneer CLD-D702 CD/laserdisc combi-player, a smaller Yamaha amplifier for my subwoofers, and a Sony CDP-CX100 CD changer. I now feel it would be a waste of money since none of that equipment will be compatible with the new Dolby Surround Digital system. Any suggestions before I make a big mistake?

CHARLES KEATING  
Manchester, MD

*Barring unforeseen complications, we expect that Dolby Surround Digital will become available on laserdiscs sometime next year, but the timetable is not certain. Equipment supporting the new system will be sparse at first and probably relatively expensive. HDTV will not be available before 1997 at the earliest. How long are you prepared to delay gratification?*

*Probably the only piece you're planning to buy that would not be adaptable for Dolby Surround Digital is the laserdisc player. An external adaptor could be patched into the Yamaha DSP-A2070, though you would*

*have to add external amplifiers for the surround and front-effects speakers, since the A2070 provides only preamp outputs for those channels, not complete pre-out/main-in loops as it does for the others. Everything else in your system should make the transition as is. Remember, too, that Dolby Surround Digital laserdiscs will continue to carry regular Dolby Surround encoding on their stereo digital soundtracks, so it's not an all-or-nothing proposition.*

Will a new kind of input be required for HDTV (high-definition TV) when it comes out, forcing everyone without a new television set to upgrade? If that is the case, everyone will have to upgrade their VCR's as well. And will HDTV be available only through cable? SCOTT HUGHES  
South Easton, MA

*HDTV will be available over the air as well as by cable, but it will require entirely new TV receivers, VCR's, and so forth. It's not clear whether an HDTV signal will pass successfully through all A/V receiver and amplifier inputs marked "video."*

## Stereo Review On-Line

Does STEREO REVIEW have an e-mail address on any of the on-line services? I'm sure that many of your technically motivated readers like myself would make excellent use of e-mail communication with the magazine. Also, I have yet to see any kind of "forum" or "newsgroup" for audio or audio/video. Maybe you could look into this possibility before someone else does?

BOB JENSEN  
Bear, DE

STEREO REVIEW is now up on America On-line. See you there!

## Log On, Beethoven

Ken Pohlmann's "Log On, Beethoven" (April "Signals") was very timely indeed. I do have problems finding my music in record stores. Yes, let us make Beethoven part of the Information Superhighway. Pipe Beethoven through the Internet and phone links!

EBERHARD K. KUSCHIEL  
New Providence, NJ

Ken Pohlmann ponders why the music industry has not moved toward convenience and quality of music acquisition through the Information Superhighway or music on demand via CD recorders at Blockbuster Video. In the past fifteen years, the push toward convenience has led to the horror of digital sound, including its harsh-

# Understanding why the new 575x is a superior surround speaker takes some reflection.



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full advantage of reflected sound to create a realistic movie experience. Here's how. In front of the 575x is a single woofer re-creating low frequencies that the human



The 575x has no hang-ups about where it's hung, sounding equally good on either ceiling or wall.

ear can't localize. On either side is a specially designed combination tweeter/midrange—one firing forward, the other back. These drivers are dipolar, or "out of phase" with each other (when one is pushing air out, the other is pulling air in). As a result, sound from the 575x reflects off several things—walls, ceiling, floor, your prized swizzle

stick collection—before it reaches your ears. When it gets there, it sounds like it's coming from all around you. Eureka. With conven-



Not since the Von Trapps has a family sounded this good. The Boston THX home theater family, featuring 555x left/center/right speakers, 595x subwoofers and 575x surrounds.

tional speakers pointed toward the listener, sound is easily localized, and this effect is lost. A few other points on the 575x: One, it handles 125 watts of power cleanly, with nearly zero distortion. Two, it comes with a handy wall mounting bracket. And, three, it's available in two popular designer colors: black and



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white. See for yourself at your local Boston dealer. Once there, your ears can witness firsthand the impressive sound of the entire line of Boston Acoustics home theater components. We bet you've never heard anything like it. Unless you've actually been inside a heavily armored Petrusian galactic battle fortress before.

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# LETTERS

ness in the upper midrange and lack of tonal ambience

Unless record and video stores are able to instantly press 180-gram vinyl records, the music industry will continue to take the cheap, profit-minded way out with formats that will ruin the products of topnotch producers and recording engineers. It's called commerce vs. culture.

PAUL GORDON  
San Diego, CA

## Stereo AM

Jack Benvent asked about AMAX-format stereo AM in April "Letters." You said that most stereo AM radios today are in cars and trucks, and they all use the now-standard Motorola C-Quam system. That is correct, but there *is* one inexpensive AMAX stereo AM radio that can be used as a tuner in a home stereo system: the Sony SRF-42 Walkman. The audio signal from the ear-phone jack is good enough that some radio stations are using the SRF-42 as a demonstration tuner. It lists for about \$38, and I've seen it for sale for as little as \$28. It's an easy and cheap way to add high-fidelity stereo AM.

ERIC NORBERG  
Portland, OR

## Home Computer Recording

I read with interest David Ranada's "Recording on a Home Computer" (April "Peripherals"), which covered IBM-type computers. Digidesign offers Sound Tools, with a DAT interface and Sound Designer II digital editing software, for many models of Macintosh computers, as well as the newer Pro Tools. Both products are widely acclaimed by recording professionals.

MARK A. BARNES  
Cincinnati, OH

## DAT vs. MD

For the life of me, I don't understand why you're reviewing MiniDisc and ignoring DAT. I'm a musician, and I bought a DAT deck last year for my home studio. Since then I've bought another, for my stereo system, and I love it. The recordings sound as good as CD's, and I can get to the end of a 120-minute tape very quickly. I buy DAT's for \$7 to \$8; the decks can be had for \$450 to \$600.

TIM CASEY  
Roslindale, MA

*We'd test more DAT machines if there were more new consumer-level DAT machines from different manufacturers. And many good older models, such as all DAT portables, have been discontinued.*

For any recording format to be successful, both the recorder and the recording medium should be priced so that the masses

can afford it. I consider myself affluent, but I did not buy into DAT mainly because of the cost—\$1,000 plus for the recorder and \$15 plus for a blank tape.

When Sony introduced the MiniDisc format last year, I could see history repeating itself. Things changed a bit around Christmas when a department store in our town marked down the Sony MDS-101 to \$550. That's when I bought one, and I love it. It is everything an audio cassette is, a CD is—only better!

I love the ease with which I can make a recording, erase a recording, move a recording, access a recording, and even label a recording. MiniDisc is a great format. But for it to succeed, Sony and other companies must offer it at prices the majority of people are willing to pay. Remember, the competition is the analog cassette recorder!

YUDHVEER S. BAGGA  
Gahanna, OH

**W**hile I would like to buy an MD recorder, I fear that the format may be stillborn like DAT, that there may be no one

able to service MD equipment after it is purchased and that there will be few prerecorded MD's or even blank MD's available.

IRVING WALDORF  
San Francisco, CA

### Sinatra

**B**ravo! to reviewer Steve Simels for having the guts to tell the truth about Frank Sinatra's "Duets" (February reviews, April letters). *Of course* "Duets" is "unlistenable." It's *terrible*.

WALTER BOETTGER  
Palm Desert, CA

### Hum, Hum Again

**I** hope you can stand one more contribution on hum reduction (February and April "Letters") before you give the matter a merciful death.

I had the same trouble with the signal from my cable company as described in Peter Mitchell's "Getting the Hum Out" (November 1993, page 108). I cured it completely by installing a pair of 0.05-micro-

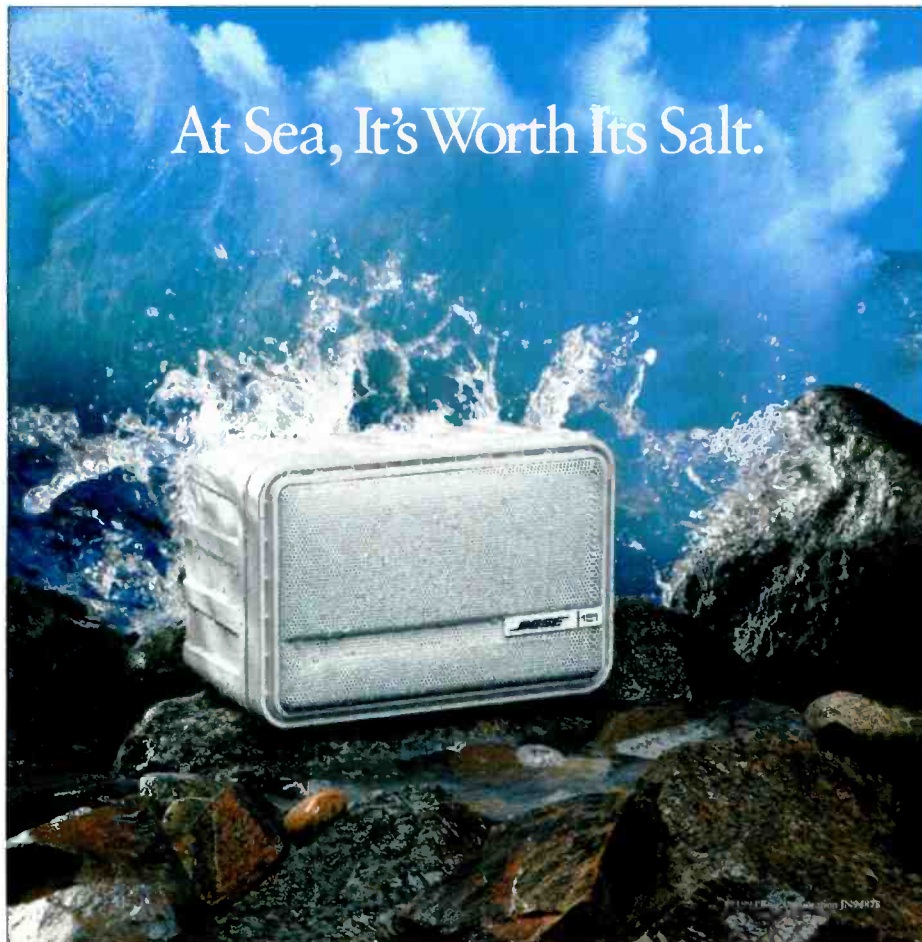
farad capacitors in series with the signal lead and shield from the cable before it connected with my system. I believe the double-balun cure illustrated in Mr. Mitchell's article could work just as well if the baluns happen to have DC isolation. The four I checked didn't and would not block the AC riding on the cable ground circuit.

DON BONHAM  
Tarzana, CA

### Correction

**M**arch "New Products" incorrectly stated that the Technics SA-GX670 A/V receiver has a subwoofer output. We apologize for any inconvenience this error may have caused. □

**We welcome your letters. Please address correspondence to Editor, Stereo Review, 1633 Broadway, New York, NY 10019. You should include your address and telephone number for verification. Letters may be edited for clarity and length.**



Nature can put the Bose® 151™ environmental speaker to the test. But not like our engineers. Consider the following. The Salt Fog Test: the 151 speaker survived 66% longer than the Marine Industry Standard with hardly a paint chip. Then they froze it. Thawed it. Immersed it in water. It still played. And played on at temperatures ranging from 140° to -22°. Conditions on your boat don't get any more grueling than that.

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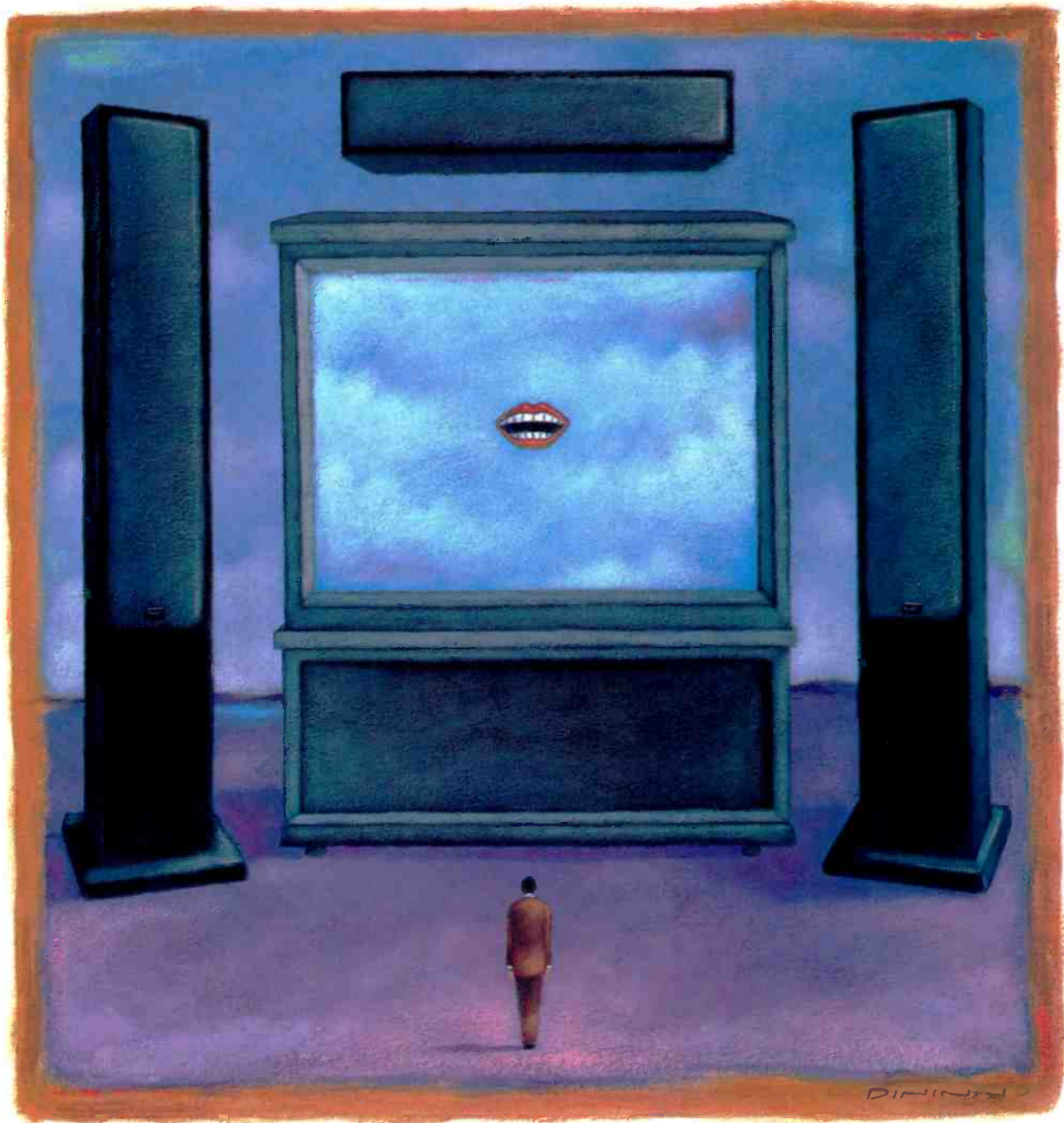
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# NEW PRODUCTS

## ▼ ADCOM

Adcom's GTP-550 A/V tuner/preamp features a Dolby Pro Logic decoder with automatic input balancing and multiple surround-delay settings, a Cinema mode that mimics the acoustics of a movie theater, and three music surround modes. Other highlights include switching

for four audio and four video components, presets for fourteen AM and FM stations, a high-blend tuner mode, and a mute button. The 50-dB quieting sensitivity for FM is given as 40 dB. Price: \$800. Adcom, Dept. SR, 11 Elkins Rd., East Brunswick, NJ 08816.

• Circle 120 on reader service card



## INFINITY ▲

Infinity's Epsilon is a hybrid speaker that employs forward-radiating (monopole) planar drivers—two tweeters, one midrange, and one "midbass"—to reproduce frequencies above 150 Hz and a servo-controlled 12-inch cone woofer to handle the bass. It has a built-in electronic crossover with contour

controls. Frequency response is given as 25 Hz to 35 kHz  $\pm 1.5$  dB, sensitivity as 87 dB, and impedance as 4 ohms. The 5-foot-tall cabinet is finished in rosewood. Price: \$10,000 a pair. Infinity Systems, Dept. SR, 9409 Owensmouth Ave., Chatsworth, CA 91311.

• Circle 121 on reader service card



## ▼ SONY

Sony's MDR-IF210K wireless headphone system uses an infrared transmitter with an operating range of more than 20 feet. The headset, which has a switch to reduce static, turns on automatically when you place

it on your head and turns off when you remove it. Two AA alkaline batteries are said to provide up to 80 hours of continuous operation. Price: \$100. Sony Accessory Products, Dept. SR, 1 Sony Dr., Park Ridge, NJ 07656.



## ▲ ADS

All S Class speakers from ADS have acoustic-suspension enclosures and 1-inch soft-dome tweeters. The line includes the 13¼-inch-tall S600 (\$649 a pair) with a 50-Hz-capable 6-inch woofer, the 17-inch S700 (\$799 a

pair) with a 40-Hz-capable 7¾-inch woofer, and the 10½-inch S500 (\$529 a pair) with a 60-Hz-capable 5-inch woofer. ADS, Dept. SR, One Progress Way, Wilmington, MA 01887.

• Circle 122 on reader service card

# NEW PRODUCTS



## ◀ FOX

At last, a remote that's easy to spot under the couch. Designed with children in mind, Fox Electronics' kidney-shaped FoXapper is preprogrammed to operate most TV's and cable boxes. The palm-size device has buttons for power, volume, mute, and channel tuning, and it is available in neon orange, lime, and plum. Price: \$15. Fox Electronics, 265 Eisenhower Lane S., Lombard, IL 60148.

• Circle 123 on reader service card

## ▼ CARVER

Designed to power a five-channel home theater system, Carver's AV-405 amplifier is rated to deliver 100 watts each to the left and right front speakers, 110 watts to the center speaker, and

50 watts to each surround speaker. The rack handles are removable. Price: \$750. Carver, Dept. SR, P.O. Box 1237, Lynnwood, WA 98046.

• Circle 125 on reader service card



## ▼ MUSEATEX

The heart of Museatex's CDD1 CD transport (\$1,749) and Bidat 1-bit digital-to-analog converter (\$1,999) is a proprietary C-Lock circuit that's said to eliminate digital jitter. The Bidat (for "Baby" Intelligent Digital Audio Translator) has both RCA and

balanced outputs and can be connected directly to an amplifier (bypassing the preamp) when an optional remote volume control is installed. Museatex, Dept. SR, One Progress Way, Wilmington, MA 01887.

• Circle 126 on reader service card



## ◀ ACOUSTIC ENERGY

Acoustic Energy's 15½-inch-tall Aegis Model 1 speaker is magnetically shielded and combines a 6¾-inch metal-cone woofer and a tweeter in a ported enclosure. Its low-frequency rating is -6 dB at 42 Hz. The black ash cabinet has two sets of gold-plated binding posts. Price: \$795 a pair. Acoustic Energy, distributed by Axis, Dept. SR, 17800 S. Main St., Suite 109, Gardena, CA 90248.

• Circle 124 on reader service card



## ▲ BIC AMERICA

BIC America's AV 2 may be the only home theater cabinet you'll find that includes speakers. Three woofer/tweeter pairs and two 10-inch subwoofers are built into its base, and two free-standing surround speakers come with the package. The 52½ x 57¾

x 19¾-inch cherry-laminate cabinet can hold a 35-inch TV and four A/V components and has two side storage compartments. Price: \$999. BIC America, Dept. SR, 883-E Hampshire Rd., Stow, Ohio 44224.

• Circle 127 on reader service card



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- The Eagles: Greatest Hits 1971-1975 (Asylum) 23481
- Eric Clapton: Unplugged (Warner Bros.) 23690
- The Best Of The Beach Boys (Capitol) 23946
- Santana: Sacred Fire: Live In South America (Polydor) 24892

- John Michael Montgomery: Kickin' It Up (Atlantic Nashville) 02402
- Donald Fagen: Kamikaze (Reprise) 11330
- Nirvana: Nevermind (Geffen) 15600
- Leacers Of The New School: T.I.M.E. (Elektra) 15642
- Paul Simon: Negotiations And Love Songs 1971-86 (Warner Bros.) 20461



- Bryan Adams: So Far So Good (Greatest Hits) (A&M) 34771
- Jackson Browne: I'm Alive (Elektra) 25039
- Tevin Campbell: I'm Ready (Gwest/Warner Bros.) 25112
- U2: Achtung Baby (Island) 25174

- US3: Hand On The Torch (Blue Note) 02362
- Counting Crows: August & Everything After (DGC) 02409
- R.E.M.: Automatic For The People (Warner Bros.) 00121
- Billie Holiday: Billie's Best (Verve) 00135
- Garth Brooks: The Chase (Liberty) 00141
- Red Hot Chili Peppers: What Hits! (EMI) 00144
- Elton John: Greatest Hits 1976-1986 (MCA) 00150
- SWV: It's About Time (RCA) 00151
- AC/DC: Live (Atlantic) 00201
- Neil Young: Harvest Moon (Reprise) 00208
- Frank Sinatra: The Best Of The Capitol Years (Capitol) 00242
- Phil Collins: Serious Hits...Live! (Atlantic) 00324
- Steely Dan: Aja (MCA) 00409
- Reba McEntire: It's Your Call (MCA) 00422
- The Very Best Of Cream: Strange Brew (Polydor) 00468
- Best Of Dire Straits: Money For Nothing (Warner Bros.) 00713
- Fleetwood Mac: Greatest Hits (Warner Bros.) 00796
- Brooks & Dunn: Hard Workin' Man (Arista) 00857
- Bon Jovi: Keep The Faith (Mercury) 00868
- Richard Elliot: Soul Embrace (Manhattan) 00871
- The Essential Charlie Parker (Verve) 00902
- Joe Henderson: So Near, So Far (Musings For Miles) (Verve) 01200
- Dr. Dre: The Chronic (Interscope) 01244
- Kate Bush: The Whole Story (EMI) 01244
- Duran Duran (Capitol) 01268
- Moody Blues: A Night At Red Rocks With The Colorado Symphony Orchestra (Polydor) 01339
- James Brown: 24 All-Time Greatest Hits (Polydor) 01342



- Tom Petty & The Heartbreakers: Greatest Hits (MCA) 02390
- Stone Temple Pilots: Core (Atlantic) 00981
- Joe Sample: Invitation (Warner Bros.) 01358
- Dwight Yoakam: This Time (Reprise) 01360
- Belly: Star (Reprise/Sire) 01449
- Creedence Clearwater Revival: Chronicle: 20 Greatest Hits (Fantasy) 01520
- Judy Collins: Judy Sings Dylan Just Like A Woman (Geffen) 01569
- Guns N' Roses: The Spaghetti Incident (Geffen) 01570
- The Beavis & Butt-Head Experience (Geffen) 01571
- Culture Club: At Worst... The Best Of Culture Club And Boy George (SBK) 01575
- Cassandra Wilson: Blue Light Till Dawn (Blue Note) 01577
- Queen Latifah: Black Reign (Motown) 01592
- Salt-N-Pepa: Very Necessary (Next Plateau/London) 01595
- Nanci Griffith: The MCA Years- A Retrospective (MCA) 01606
- Stevie Wonder: Songs In The Key Of Life (Motown) 02104
- Shai: Right Back At Cha (Remix) (Gasoline Alley/MCA) 01610

- Sting: Ten Summoner's Tales (A&M) 01334
- Bobby Brown: Remixes In The Key Of B (MCA) 01611
- Wu-Tang Clan: Enter The Wu-Tang (RCA) 01613
- George Jones: High-Tech Redneck (MCA) 01614
- Jodeci: Diary Of A Mad Band (Uptown) 01615
- Ralph Tresvant: It's Goin' Down (MCA) 01616
- Lemonheads: Come On Feel The Lemonheads (Atlantic) 01621
- Wayne's World 2/Sdtrk. (Reprise) 01622
- Madonna: The Immaculate Collection (Sire) 54164
- George Gershwin: Gershwin Plays Gershwin: The Piano Rolls (Elektra/Nonesuch) 01675
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- Genesis: Live: The Way We Walk, Vol.1 (Atlantic) 02033
- Tanya Tucker: Collection (MCA) 02132
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- Elton John: Duets (MCA) 01609
- Verve's Grammy® Winners (Verve) 02384
- Romeo Is Bleeding/Sdtrk.-Music By Mark Isham (Verve) 02387
- Richard Marx: Paid Vacation (Capitol) 02537
- Prince: The Hits 1 (WB/Paisley Park) 02228
- Reality Bites/Sdtrk. (RCA) 02555
- James: Laid (Mercury) 02565
- Crash Test Dummies: God Shuffled His Feet (Arista) 02593
- Grammy's Greatest Moments Vol.1 (Atlantic) 02594
- Grammy's Greatest Moments Vol.2 (Atlantic) 02595
- Shadowfax: A Windham Hill Retrospective (Windham Hill) 02629
- Ray Lynch: Deep Breakfast (Windham Hill) 02634
- Soundgarden: Badmotorfinger (A&M) 05637

- Ace Of Base: The Sign (MCA) 02354
- CeCe Peniston: Thought Ya Knew (A&M) 10580
- Pat Metheny Group: The Road To You-Live In Europe (Geffen) 11059
- Peter Gabriel: Shaking The Tree- 16 Golden Greats (Geffen) 11089
- Bonnie Raitt: Luck Of The Draw (Capitol) 15567

- Eurythmics: Greatest Hits (Arista) 20611
- ABBA: Gold-Greatest Hits (Polydor) 20679
- Ramsey Lewis: Sky Islands (GRP) 20733
- Vince Gill: I Still Believe In You (MCA) 21063
- Randy Travis: Greatest Hits Vol. 1 (Warner Bros.) 21091
- The London Philharmonic Orchestra: Synphonic Music Of Yes (RCA Victor) 01685
- Kiri Te Kanawa: Kiri On Broadway (London) 01705
- James Galway: Cor certol-Galway Plays Mozart (RCA Victor Red Seal) 01742
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- José Carreras: With A Song In My Heart — A Tribute To Mario Lanza (Teldec) 21039
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- Cecilia Bartoli: The Impatient Lover (London) 44664
- Kathleen Battle: Bel Canto (DG) 44673
- Luciano Pavarotti: Ti Amo — Puccini's Greatest Love Songs (London) 60376
- Bernstein, On The Town: Tilton Thomas conducts (DG) 73784
- Gershwin Plays Gershwin: The Piano Rolls (Elektra Nonesuch) 01675

### Classical Treasures



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- Zinman: Górecki, Symphony No. 3 (Nonesuch) 00110
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**George Strait: Easy Come, Easy Go** (MCA) 25486

**Guns N'Roses: Use Your Illusion II** (Geffen) 25534 †

**George Benson: Love Remembers** (Warner Bros.) 33823



**Kenny G: Breathless** (Arista) 54317

**Gin Blossoms: New Miserable Experience** (A&M) 24884

**Ella Fitzgerald: The Best Of The Song Books** (Verve) 34616

**Jazzy Jeff & The Fresh Prince: Code Red** (Jive) 34692

**Lenny Kravitz: Are You Gonna Go My Way?** (Virgin) 34834

**Miles Davis & Quincy Jones: Live At Montreux** (Warner Bros.) 35011

**Fourplay: Between The Sheets** (Warner Bros.) 35074

**Foreigner: Classic Hits Live** (Atlantic) 35152

**Pet Shop Boys: Very** (EMI/ERG) 35187

**Common Thread: Songs Of The Eagles** (Giant) 25071

**k.d. lang: "Even Cowgirls Get The Blues"/Sdtrk.** (Warner Bros./Sire) 35190

**Miki Howard: Miki Sings Billie: A Tribute To Billie Holiday** (Giant/Reprise) 35135

**Nina Simone: A Single Woman** (Elektra) 35417

**Guns N'Roses: Use Your Illusion I** (Geffen) 35469 †

**Melissa Etheridge: Yes I Am** (Island) 35501

**The Rodgers & Hammerstein Collection** (MCA) 40015

**Mötley Crüe: Decade Of Decadence** (Elektra) 40298

**David Bowie: Changesbowle** (Rykodisc) 43693

**The Best Of The Doobie Brothers** (Warner Bros.) 43738

**k.d. lang: ingénue** (Warner Bros./Sire) 44371

**TLC: Oooooohhh... On The TLC Tip** (LaFace) 50167

**Blind Melon** (Capitol) 54234

**Yes: Classic Yes** (Atlantic) 50248

**Enya: Shepherd Moons** (Reprise) 53190

**Emmylou Harris: Cowgirl's Prayer** (Asylum) 53295

**U2: The Joshua Tree** (Island) 53501

**Bob Marley: Legend** (Capitol) 53521

**4 Non Blondes: Bigger, Better, Faster, More!** (Interscope) 53593

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**The Judds: Greatest Hits, Vol. 2** (RCA) 74054  
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- 3  HARD ROCK Aerosmith, ZZ Top
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- 5  CLASSICAL Luciano Pavarotti, Itzhak Perlman
- 6  JAZZ Pat Metheny, Spyro Gyra
- 7  HEAVY METAL Iron Maiden, Anthrax
- 8  R&B/DANCE Tevin Campbell, Boyz II Men

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# NEW PRODUCTS

## SONANCE ▶

While pivoting tweeters are common in car stereo, they are still rare in home speakers. Sonance's 15-inch-tall Director 20 has a magnetically shielded 6½-inch woofer and a coaxially mounted tweeter that can be aimed at any angle. Cabinet finish is woodgrain vinyl. Price: \$300 a pair. Sonance, Dept. SR, 961 Calle Negocio, San Clemente, CA 92673.

• Circle 128 on reader service card



## ▲ ROTEL

Rotel's RB956AX power amplifier is rated to deliver 30 watts each into six channels with no more than 0.03 percent distortion. Each pair of channels can be independently bridged to deliver 90 watts continuous, yielding four

possible power configurations. The amp has front-panel level controls for its three stereo inputs. Price: \$500. Rotel, Dept. SR, P.O. Box 8, North Reading, MA 01864-0008.

• Circle 129 on reader service card



## ◀ TOSHIBA

Toshiba's TW56D90 rear-projection TV features a 56-inch (diagonal) screen with a movie-theater-like 16:9 aspect ratio, three picture-expansion modes, a vertical image adjuster, and two TV tuners. It also packs a Dolby Pro Logic decoder and 68 watts of power to drive its built-in speakers and a supplied pair of surrounds. Cabinet dimensions are 55 x 59 x 25 inches. Price: \$4,999. Toshiba, Dept. SR, 82 Totowa Rd., Wayne, NJ 07470.

• Circle 130 on reader service card



## ▲ ROCKFORD FOSGATE

Rockford Fosgate's new car signal-processor lineup stars the Symmetry EPX (\$824 with remote control), which combines a preamp, an adjustable three-way crossover with ten discrete outputs, and a fourteen-band equalizer in one box. Also in the lineup are two active crossovers, the three-way Punch 3x (\$164) and the five-way Punch 5x (\$219). Rockford Fosgate, Dept. SR, 546 S. Rockford Dr., Tempe, AZ 85281.

• Circle 132 on reader service card

## CELESTION ▶

Celestion's CSW powered subwoofer combines an 8-inch dual-voice-coil driver, a 75-watt amplifier, and a two-way active crossover in a 10 x 20½ x 18-inch band-pass enclosure. It accepts line- and speaker-level inputs, and its rated output is -6 dB at 35 Hz. Price: \$449. Celestion, Dept. SR, 89 Doug Brown Way, Holliston, MA 01746.

• Circle 131 on reader service card



# NEW PRODUCTS

## ▼ SEGA

Sega's Genesis CDX portable game console plays both Sega CD's and Genesis cartridges, and it doubles as a basic CD player. It measures 7¼ x 5½ x 1¼ inches and weighs less than 1½ pounds.

Price: \$400, including a six-button Arcade Pad and three Sega CD's. Sega of America, Dept. SR, 255 Shoreline Dr., 2nd floor, Redwood City, CA 94065.

• Circle 133 on reader service card



## ▲ L.A. CONCEPTS

The Model 2302-2 CD lamp (\$79.50) from L.A. Concepts is made of sturdy steel and holds sixty CD's in its base. The white 72-inch-tall accent lamp uses a 300-watt halogen bulb and has a rotary dimmer switch. The

company also offers a black 26-inch-tall table-top lamp, the Model 1606-2 (\$55), which holds sixteen CD's. L.A. Concepts, Dept. SR, 19500 S. Vermont Ave., Torrance, CA 90502.

• Circle 134 on reader service card

## ◀ WATERWORKS

The all-weather Waterworks Soundrock uses an 8-inch dual-voice-coil woofer and two wide-dispersion tweeters to produce stereo sound. Price: \$499 (includes 50 feet of outdoor wire). Waterworks Acoustics, Dept. SR, 3365 Fernside Blvd., Alameda, CA 94501.

• Circle 135 on reader service card



## ▼ SEFIDCO

You can use any TV remote control to operate Sefidco's TurnVision motorized TV turntable. The platter, which rotates 90 degrees to either side, is available in a standard table-top version or in elevated, wall-mount, and ceiling-mount versions for TV's with screen sizes

ranging from 13 to 50 inches. "Teaching" the stand to respond to a remote is a simple procedure. Prices range from \$139 to \$299. Available factory-direct from Sefidco Control Systems, Dept. SR, 2950 Sombrosa St., Carlsbad, CA 92009.

• Circle 136 on reader service card

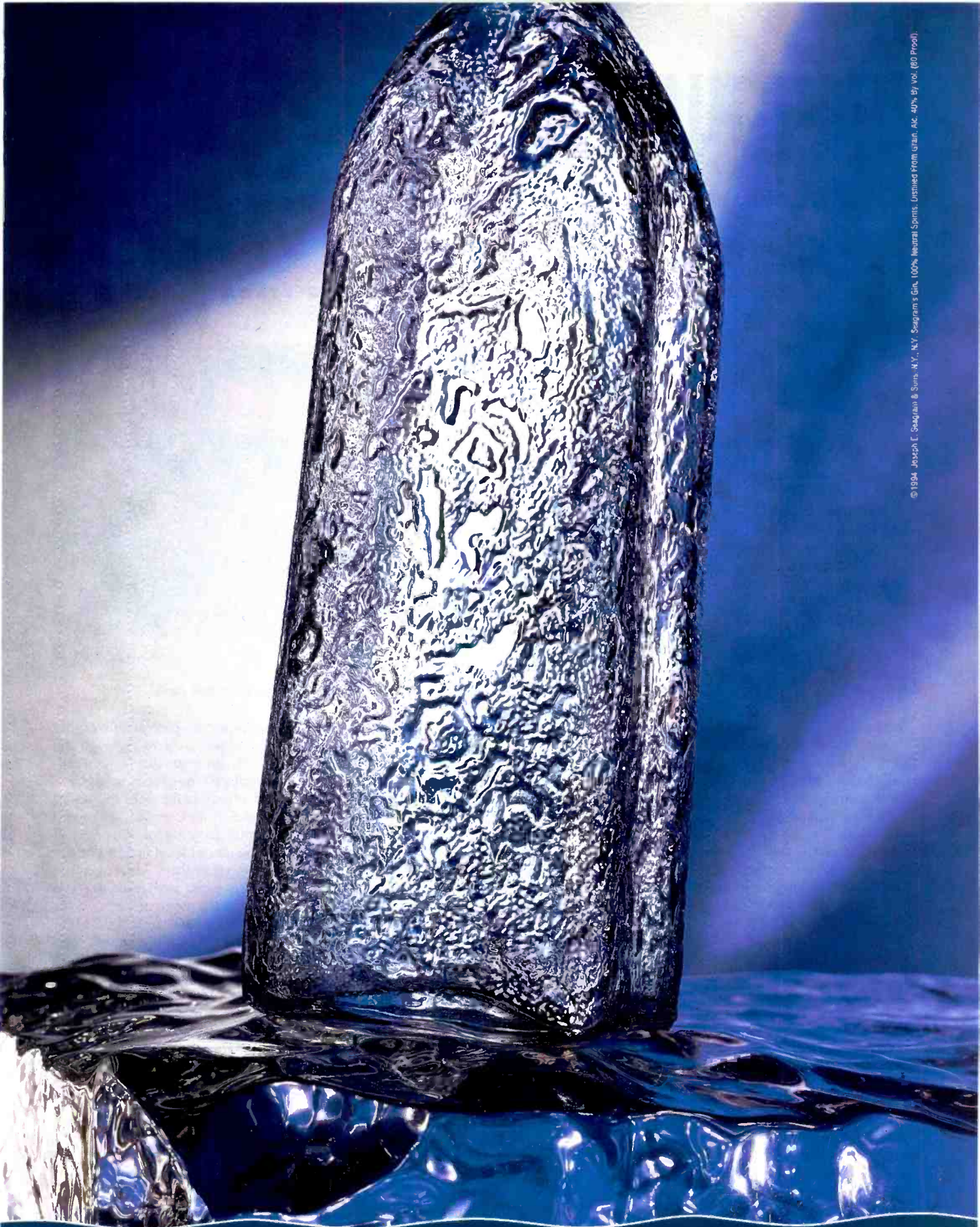


## ▲ MTX

Part of MTX's new Black Gold series, the BGA2125 car amplifier is rated to deliver 125 watts per channel into 4 ohms or 250 watts into 2 ohms with less than 0.03 percent distortion. In bridged-mono mode, its rated output is 500 watts into 4 ohms. The 16 x 8

x 2¼-inch amplifier uses a separate synchronized power supply to feed each output section and has an 18-dB-per-octave infrasonic filter. Price: \$649. MTX, Dept. SR, 4545 E. Baseline Rd., Phoenix, AZ 85044.

• Circle 137 on reader service card



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WHAT'S BUMPY OUTSIDE AND SMOOTH INSIDE?

# PERIPHERALS

PRODUCTS AND TRENDS  
THAT GO BEYOND  
MAINSTREAM AUDIO/VIDEO

## Audiophile Sound From Your PC?

BY CRAIG STARK

**A**re any of the plug-in sound boards for the IBM-compatible PC worthy of an audiophile's consideration? In the few years since "multimedia" became a buzzword among computer users, sound cards have progressed from 8-bit game enhancements to 16-bit claimants of "true CD quality." But do any of the available cards live up to that billing?

I recently had an opportunity to test some two dozen of these boards, all operating at the 16-bit/44.1-kHz sampling rate used by CD's. On the basis of the same performance tests that I would apply to CD players and DAT recorders, I can recommend only one—the Turtle Beach Monterey (or its predecessor model, the Turtle Beach MultiSound)—to the serious listener.

The Monterey board has two basic parts. One is the sound card itself, called the Tahiti, which is basically a DAT recorder that uses the computer's hard disk instead of tape as its storage medium. The other is an attached daughterboard, the Rio, which is a full-featured wave-table MIDI synthesizer that enables you to create music and sound effects electronically. In addition to supporting the General MIDI (Musical Instrument Digital Interface) patch standards with 128 digitally recorded instrumental sounds, or "samples," the Rio supplies a wide variety of presets for reverb and allows you to turn any file you create in the .WAV format (the MPC multimedia standard) into a preset. The Monterey's new Wavefront synthesizer supports up to thirty-two voices simultaneously (twenty-four for full-bandwidth audio) and is a marked improvement over the Proteus synthesizer used in previous models.

The hardware is controlled by the industry's most sophisticated software, WAVE 2.1, which is also sold sepa-



Turtle Beach's MultiSound card, predecessor of the new Monterey card.

rately for \$199 for use with other audio boards. It contains a software-controlled stereo mixer with inputs for two line-level sources, including .WAV-format digital signals and on-board or external MIDI sources.

The WAVE graphic editor lets you splice two takes together in such a way as to prevent tell-tale clicks and

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### SPECIFICATIONS —

### AND WITH GOOD REASON.

pops. It can keep three sound files open at once and permits mixing, cross-fading, gain equalizing, and muting. You can play files backwards, if you like, or invert the phase of an out-of-phase channel. You can apply up to 300 percent of time compression or expansion. You can also correct the shape character of a file, using a four-

band parametric/graphic equalizer that draws its response curve right on the screen. You can even display a three-dimensional FFT frequency analysis.

The Monterey is the only PC sound card I have found whose software-based digital recorder permits you to preview the record level before you actually start recording. Moreover, its calibration is exact and readable. The recorder supports mono or stereo, 8- or 16-bit resolution, and 11.025-, 22.05-, and 44.1-kHz sampling rates. The board uses 64-times oversampling with 16/18-bit analog-to-digital (A/D) converters and 8-times oversampling with interpolating filters and sigma-delta digital-to-analog (D/A) converters.

Few PC sound-card makers even publish specifications—and with good reason. Turtle Beach proclaims its specs right on the box. On more than half the boards I tested, for example, the frequency response was down by more than 6 dB at 20 Hz, and response above 10 kHz usually dropped by 2 to 3 dB. The bass rolloff was at least partially due to the extensive use of gritty-sounding, undersized electrolytic



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# PERIPHERALS

capacitors to couple one audio stage to the next. The Monterey, in contrast, eliminates all electrolytics from the signal path. Its direct-coupled design and use of audiophile-quality IC's gave it a frequency response within 0.3 dB from 0 to 19 kHz. (As with DAT recorders, a sharp anti-aliasing filter drops response at 20 kHz by 2 to 3 dB.) I measured its A-weighted signal-to-noise ratio as 86.7 dB and its total harmonic distortion as 0.007 percent—both impressive numbers, sound card or not.

Like most of today's cassette decks, the Monterey lacks a microphone input. If you intend to use the board for narrated presentations or to create your own audio samples, you'll need a pre-amp to bring mike signals up to line level. Similarly, while the Monterey contains a standard four-pin on-board connector for an internally mounted CD-ROM drive, it contains no SCSI

or other controller interface for the drive. In most cases, that means using up a second slot in the PC.

## System Requirements

Handling digital audio files with 16-bit/44.7-kHz sampling requires a great deal in terms of computer resources. A 25-MHz 386-based machine with 2 megabytes of RAM is the recommended minimum starting point, along with Windows 3.1.

Turtle Beach does what it can to minimize the load placed on the computer by replacing the DMA (direct memory access) design used by almost all sound boards with a proprietary architecture ("Hurricane") that is said to be at least five times as fast. Additionally, it off-loads much of the work to an on-board signal processor that can handle 20 million instructions per second.

Until Microsoft approves a high-fi-

delity audio compression system like the ones used by the DCC and MD formats, however, no one can ease the heavy hard-disk storage requirement. Recording or playing back CD-quality stereo sound requires transferring some 176 kilobytes of data per second—or about 10.6 megabytes of disk storage per minute. While seasoned Windows users have become accustomed to considering hard-disk sizes of 300 megabytes or more, users of older machines may find that their available disk space will hold only a minute or so of full-fidelity sound. And the transfer rate of a number of older CD-ROM drives may prove inadequate, requiring an upgrade to a double-speed model.

The whole Turtle Beach Monterey package, every part of which is designed by audio professionals for studio-quality results, is priced at \$399. The sound is worth it. □



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# AUDIO Q & A

BY IAN G. MASTERS

## Bass for the Space

**Q** Recently I was auditioning a subwoofer in a local stereo store, and the bass was not as earthshaking as I had expected. The salesman said that bass wavelengths are very long and the bass would actually be stronger in a larger room. If that's true, how do car stereo systems reproduce such deep bass in the confines of an automobile?

TODD R. URMANIC  
Elyria, OH

**A** It's not so much the size of the room as the relationship between its dimensions and the wavelength of the sound the speaker is trying to reproduce. If there's a simple arithmetic relationship between the two, standing waves may result, and those can selectively boost or cancel certain frequencies depending on where the speakers and listeners are in the room. Because the wavelengths are long at low frequencies, large spaces may, in fact, be worse than small ones—or cars, for that matter.

But it may simply be that the speaker you heard was not *meant* to be earthshaking. One of the jobs of a subwoofer is to reproduce frequencies below those your regular speakers can easily handle, not to pound out enough bass to rattle your teeth; ideally, you should hear no difference except when a really low note comes along. Or it may be that the speaker you heard was not really a subwoofer: In so-called satellite/subwoofer systems, the bass unit is usually just the woofer for the system, not very “sub” at all.

## Level Differences

**Q** When I play CD's in my carousel changer, I notice considerable differences in level from disc to disc. With random or shuffle play it can be quite annoying, as a comfortable level for one disc may not be comfortable for another. Is there any sort of compressor/limiter that could solve this problem?

JONATHAN WARD  
Durham, NC

**A** Such devices do exist, but their effect would not be limited to overall balance between one selection and the next. Instead, they would continue to work throughout the music itself. That may be desirable in some circumstances, but it would mean a decrease in dynamic range, thus defeating one of the compact disc's main strengths.

I agree, however, that such level differences are very annoying, and probably unnecessary. My own experience is that unusually high- or low-level CD's are the exception, however, and that most match fairly

well. So I have learned simply to avoid certain discs when I load up the ol' changer.

## Turn-On Pops

**Q** When I turn on my equipment, I hear loud pops through my speakers. All components are fused, the voltage in the house is normal, and I use a line conditioner. Is it because I am using zip cord between the amplifiers and the speakers (the runs are short)? If not, how do I eliminate the noise?

JIM RAYMOND  
Califon, NJ

**A** The fuses and speaker wires have absolutely no effect on the pops you describe. Most electronic equipment has a tendency to make such turn-on noises, and most hi-fi amplifiers delay connecting their outputs for a second or so after powering up so that the pops are not fed to the speakers. Apparently your equipment doesn't provide that feature, but you can do much the same thing manually.

Make sure you turn the amplifier on last, so that noises generated earlier in the chain are not amplified. If the amp itself is the culprit, you might consider switching the speakers off when you apply power. Many amplifiers have appropriate switches for that; if not, adding an on-off switch is a simple matter. In any event, although the pops may be annoying, they are not likely to cause damage unless they are really loud.

## Speaker Sensitivity

**Q** In magazine test reports and other places where speaker characteristics are discussed, I have often read that the sensitivity of a particular model is, say, 90 dB. What does that mean?

W. H. Granger  
Decatur, GA

**A** It's audio shorthand for a procedure that comes as close as anything to a standard for measuring speaker output. First of all, it should really be “90 dB SPL” (for sound-pressure level)—that is, 90 dB greater than a standard reference that corresponds roughly to the lowest level most people can hear. To get the measurement, the speaker is fed a signal of 2.83 volts, which would equal 1 watt if the speaker had a perfectly resistive impedance of 8 ohms. The output is measured at a distance of 1 meter directly in front of the speaker, ideally in an anechoic (echo-free) chamber. Since there are relatively few such chambers around, sensitivity is often measured in a live acoustic environment, which usually produces a slightly higher number but might, in fact,

come closer to representing what a speaker is capable of in a real room.

## Equipment Warmup

**Q** I have heard that reproduced music sounds better when the amplifier has been on for a while and has had a chance to warm up. Is that true? If so, what would be the advantages or disadvantages of leaving an amplifier on all the time? Could it be a fire hazard?

PAUL MILLER  
Nashville, TN

**A** I've never heard of anyone burning down his house by leaving the stereo on, but I suppose it's possible if the amplifier became hot enough or had a serious malfunction. On the other hand, leaving any electrical device on permanently wastes energy.

That said, I should point out that there is a body of thought that suggests the components in your amplifier (and other equipment) don't really stabilize until they reach their normal operating temperatures. Thus, there might be a tiny change in performance over the first minutes of operation. It would be very small indeed, however, and not likely to be audible except in pathological cases.

## Tape Counters

**Q** I do a lot of copying from one three-head cassette deck to another. Even when I start the decks at exactly the same time, the real-time counters may be off by as much as 2 minutes when I reach the end of the side. At other times, the difference will be only a few seconds. Is this just a problem with the counters, or should I have the decks' speeds calibrated?

ERIC DOHERTY  
Roseville, MN

**A** I'd vote for a problem with the counters. Although time indicators on tape decks can be useful in a rough sort of way, most of them are not particularly accurate or consistent, which may account for the discrepancy. If you're worried that one or both of your machines may have a speed problem, you can check that by playing duplicate tapes simultaneously in both machines, swapping them back and forth occasionally. If the musical pitch is always the same on both, you don't have a problem. If it varies, a service trip is a good idea.

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.



KEF Uni-Q

## WHERE DOES THE TWEETER OF A HIGH FIDELITY LOUDSPEAKER BELONG?

### Q - S E R I E S

This question may confuse those who believe that the measure of a loudspeaker is the number of its drivers. It will also elude those who have never bothered to question conventional driver placement, which always separates the woofer from the tweeter.

In fact, the most acoustically correct location for the tweeter is precisely at the *center* of the woofer. This strategic placement creates a single sound source, allowing high and low frequencies to reach your ears at the proper time, regardless of where the speakers are placed or where you are sitting. (No wonder KEF's patented Uni-Q® is the technology of choice for advanced Home Theater applications.)

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buttons. And it works right through walls so you control the system from anywhere in your home.

Granted, it's easy for us to believe all of this represents a new standard. But apparently others believe it as well. That's why *Time* magazine selected the Lifestyle® system as one of the Ten

two musical reviews of

**RDL**  
ACOUSTICS

speakers:

from **SOUND & IMAGE** (Spring, 1994)

own space. At times, the B-1s even achieved the ideal: The actual speaker boxes seemed to *disappear*, leaving only two violins, a viola, a violoncello, and the

that they're sold via mail order with a 30-day moneyback guarantee makes them a risk-free proposition—and, very likely, a rewarding one. —*Marc Horowitz*

from the Los Angeles **Reader**

*RDL Acoustics' New Line of Speakers Can Bring an Orchestra Into Your Living Room*

By Laurence Vittes

...the speakers' quiet elegance and amazing ability to reproduce demanding full orchestral sound with wide dynamic range and magnificent size, without a trace of digital harshness, I had enthusiastically

Circuit City: They are available only by mail-order from the Bellingham, Mass., factory, with a thirty-day, no-strings return policy (you

**and a technical one, which explains why they sound the way they do:**

from **THE BAS SPEAKER**  
THE PUBLICATION OF THE BOSTON AUDIO SOCIETY (*David R. Moran*)

All furthermore still use Allison's unsurpassed, strangely unimitated convex tweeter. (It is now called the RDL tweeter and can't be called the Allison

yet been on. Therefore its ultrawide radiation and airy imaging may be even more uniform than in previous implementations. In any case, in over a dozen measurements, the RDL tweeter consistently ran  $\pm 2$ dB from 1-2kHz to around 18kHz.

**FACTORY-DIRECT SALES** RDL speakers are sold directly from our factory on a 30-day trial basis. Since there is no retail markup, prices are substantially lower than they would be at retail. We also sell Philips, Sherwood, and other brands of electronic products, as well as complete systems.

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# CAR STEREO

## MEASUREMENTS

Measurements given are for the worse of the two channels.

### DCC PLAYBACK

<b>Frequency response</b>	.....
.....	+0.1, -0.71 dB, 20 Hz to 20 kHz
<b>Signal-to-noise ratio</b>	.....
A-weighted	87.3 dB
unweighted	86.1 dB
<b>Dynamic range (A-wtd.)</b>	84.2 dB
<b>Distortion (THD+N at 1 kHz)</b>	.....
at 0 dB	0.011%
at -20 dB	0.074%
<b>Channel separation</b>	.....
1 kHz	82.3 dB
20 kHz	74.3 dB
<b>Linearity error (at -90 dB)</b>	+3.1 dB
<b>Interchannel phase shift (at 20 kHz)</b>	0.6°
<b>Fast-wind time (DCC-60)</b>	89 seconds
<b>Maximum output level</b>	1.4 volts

### ANALOG CASSETTE PLAYBACK

Standard IEC high-bias test tapes were used for all measurements.

<b>Frequency response</b>	.....
.....	+3.1, -2.4 dB, 31.5 Hz to 18 kHz
<b>Signal-to-noise ratio</b>	.....
no noise reduction (A-weighted)	56.3 dB
no noise reduction (unweighted)	51.2 dB
Dolby B (unweighted)	53.8 dB
<b>Distortion (THD+N at 1 kHz)</b>	1.2%
<b>Crosstalk (at 1 kHz)</b>	49.2 dB
<b>Channel separation (at 1 kHz)</b>	41.3 dB
<b>Speed error</b>	0.40%

### Wow and flutter

weighted rms	0.08%
IEC/DIN peak-weighted	0.17%

### TUNER SECTION

All figures are for FM only except frequency response.

<b>Maximum output</b>	.....
(100% modulation)	0.70 volt
<b>50-dB quieting sensitivity</b>	.....
(mono)	20.2 dBf
<b>Distortion (THD+N at 65 dBf)</b>	.....
mono	0.38%
stereo	1.21%
<b>Signal-to-noise ratio (at 65 dBf)</b>	.....
mono	48.5 dB
stereo	46.6 dB
<b>Channel separation</b>	.....
(1 kHz, 65 dBf)	41.2 dB
<b>AM rejection (at 65 dBf)</b>	52.7 dB
<b>Capture ratio (at 65 dBf)</b>	2.5 dB
<b>Selectivity</b>	.....
alternate-channel	78.2 dB
adjacent-channel	16.8 dB
<b>Image rejection</b>	81.1 dB
<b>Frequency response</b>	.....
FM	30 Hz to 15 kHz +0.6, -1.9 dB
AM	30 Hz to 3 kHz +0, -8.1 dB

### PREAMPLIFIER SECTION

<b>Tone-control range</b>	.....
100 Hz	±10.6 dB
10 kHz	±10.3 dB

provides faster access to the desired track. The B.Skip button (Preset 5) lets you skip over blank tape (DCC's may contain fast-wind markers that automatically engage fast forward). The repeat button (Preset 6) lets you repeat a track. The deck automatically distinguishes between normal, high-bias, and metal analog tapes and can spot a DCC tape a mile away.

The CQ-DC1 also provides control of an optional pair of six-disc Panasonic CD changers. The CD button selects a changer, the PRG/P.SET button selects discs, and the up/down buttons let you select tracks and search forward or back. The scan button (Preset 1) plays the beginnings of discs or tracks on a disc, the random button (Preset 3) provides random playback

from the current disc or the entire magazine, and the repeat button (Preset 6) selects track or disc repeat.

To help keep everything intelligible, a number of buttons control the LCD readout. The display button switches it between station frequency, tape counter, track times, and alphanumeric titles. When the button is held down, it engages a title-input mode in which alphanumeric characters can be selected with the up/down buttons to make titles of up to twelve characters each. The titles, which can be assigned to six FM and six AM stations, the auxiliary input, and up to thirty CD's, appear whenever a station is tuned, the auxiliary input is selected, or a titled disc is played. Titles can be reviewed by pressing the T.Recall (Dolby) but-

ton. The C.RST button resets the tape-counter display. A clock button is used to enter and recall the time of day, the date, and the year. (What? No BC/AD indicator?)

The large LCD panel provides a wealth of other information, including station frequency, the settings of such audio parameters as volume and bass, user-programmed titles, and title information encoded on prerecorded DCC tapes. The display also shows elapsed tape and track times for prerecorded DCC's and has a counter for analog tapes and user-recorded DCC's. Finally, the display has icons for loudness, mute, stereo reception, tape direction, metal tape, and so on.

### Lab Tests

The tape and tuner sections of the CQ-DC1 performed well on the test bench. For DCC playback, its frequency response erred by only 0.71 dB at 20 kHz, its signal-to-noise ratio (S/N) was high, and its total harmonic distortion plus noise (THD+N) was low. Other characteristics, such as channel separation and dynamic range, were also quite good. Low-level linearity of the player's digital-to-analog (D/A) converter was okay but not great. Of course, the PASC perceptual coding system on which DCC is based must ultimately be judged by ear.

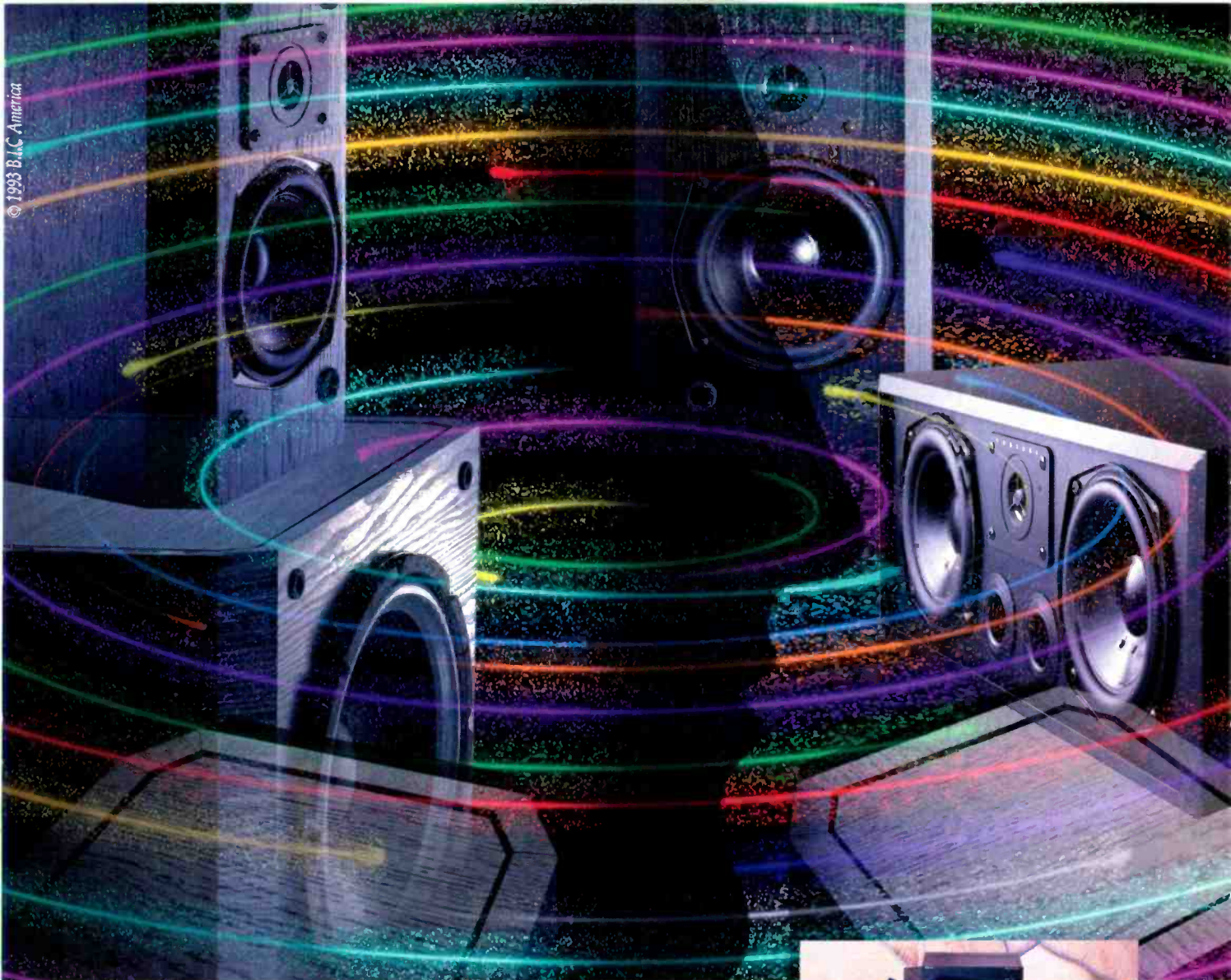
Analog tape performance measured about as well as any car tape deck. Frequency response was reasonably flat, S/N was reasonably good, and speed accuracy was decent. On the down side, THD+N measured somewhat higher than usual.

The FM tuner was quite good. Sensitivity was very good, adjacent- and alternate-channel selectivity were excellent, and image rejection was super. As with the tape deck, however, the superlatives were tempered by one mild weakness. In this case, it was higher than average THD+N in stereo, caused mainly by 19-kHz pilot-tone leakage rather than actual distortion—a common flaw in car tuners, and one that will vanish when digital radios appear.

### Installation

Mounting the CQ-DC1 in the dashboard was as uneventful as any head-





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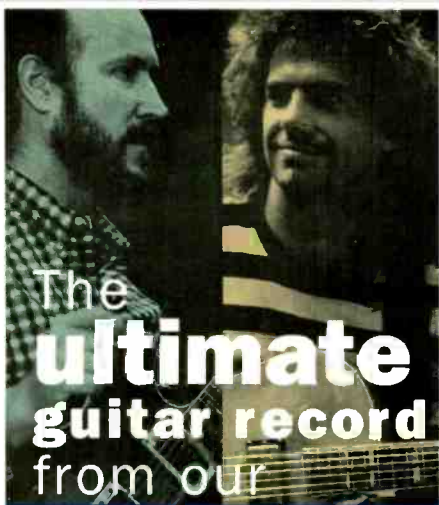
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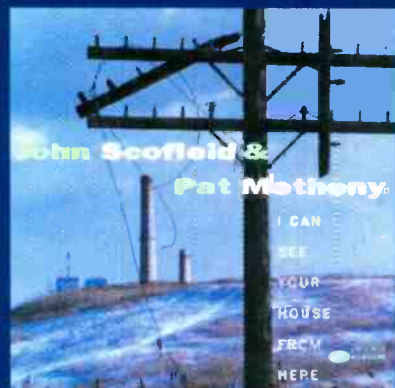
**Scofield  
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The rapport was instant. The music, a delight. Scofield, with his earthy attack and bluesy feel. Metheny, with his ethereal improvising and glorious tone. But quickly, the differences disappeared. The challenge of playing with each other seemed to unleash every instinct, emotion and influence they share.

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# CAR STEREO

unit installation I have performed. I secured the sleeve into the opening by bending tabs and screwing in a rear strap. After removing a pair of transport screws, I slid in the head and checked to see that the cooling fan inside its chassis had sufficient clearance to draw in fresh air. I made the usual assortment of electrical connections, wiring the head's front and rear stereo preamp outputs to an outboard power amplifier and hooking up the antenna lead and remote-amplifier turn-on lead. Finally, I secured the chassis ground strap and the battery and ignition power leads, both of which are fused and filtered.

## Road Tests

Installation chores completed, I hit the byways and highways of South Florida, first cruising all of my favorite tuner torture spots. I was immediately impressed with the CQ-DC1's radio reception. Even under adverse conditions, it did an excellent job of locking onto weak signals and holding on through interference while rejecting noise. Moreover, when the signal was strong it provided very good fidelity and was not bothered by signal overload. Features such as automatic preset-station programming worked flawlessly.

Next I auditioned the DCC deck with both prerecorded and home-made tapes. After living with CD for a decade, I quickly grow frustrated by the tortoise-like access speeds typical of tape. Although DCC access times are nothing close to those for CD (or MiniDisc), they are somewhat faster than for analog cassette. Essentially, the DCC transport operates like a very fast analog deck: if tape doesn't bother you, you'll like DCC's access speed, but if you're hooked on CD, DCC will drive you crazy.

I drove along a number of bumpy roads to test the deck's shock resistance. Playback was smooth even under very rugged conditions that might have caused a CD player to skip. If you are an off-road kind of person, DCC is a more stable playback medium than CD. On the other hand, if you stick to city roads, properly installed CD head units rarely skip.

Pulling off to the side of the road, I

spent some time simply listening to the CQ-DC1's sound quality. As with other DCC products I have tested, I didn't detect any problems in fidelity. The PASC perceptual-coding algorithm performs excellently, and I have not found any listener who can reliably hear the difference between a CD and a DCC copy of it. Like CD head units, the CQ-DC1 performed with zero wow and flutter, absolute speed accuracy, extended frequency response, and very low distortion, making it clearly superior to any analog cassette head unit.

Speaking of analog, I loaded in a conventional cassette and verified that the CQ-DC1 can play analog tapes with style. The sound was quite good, and the transport was very smooth compared with those of most analog-only decks I've tested. If you've got a huge investment in analog cassettes, you might consider a DCC deck simply because it will treat them with great respect while providing the opportunity to upgrade easily to DCC.

Ultimately, the success of any new format depends on the availability of prerecorded software. Few people buy hardware for the sake of hardware. They buy it so they can listen to the music they like, hoping the new hardware will enhance fidelity or convenience or both. Although the catalog of prerecorded DCC tapes is reasonably big, it has grown slowly over the first year. Chances are, unless your tastes are extremely mainstream, you will have trouble finding the music you want on DCC. On the other hand, you could always buy a DCC recorder and a pile of blank tapes. That solves the selection problem, but only at considerable cost and time. Or you could just stick to analog playback much of the time, gradually switching over to DCC as more tapes become available.

If you are committed to tape as your primary playback medium (with the option of adding a CD changer), the CQ-DC1 is attractive. But it is clearly a tradeoff. DCC's compatibility with the analog cassette is its greatest strength and its greatest weakness. It gives you continued access to the world's largest library of recordings, but can you live with the frustrations of a tape transport? □

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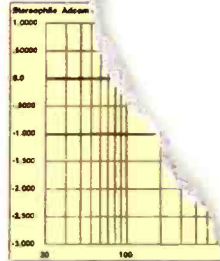


Fig. 1 Adcom GDA-600, frequency response (top); de-emphasis error channel dashed, 0.5dB/div.

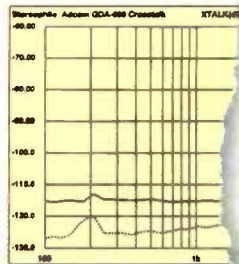


Fig. 2 Adcom GDA-600, crest factor (top); error channel dashed, 10dB/vertical div.

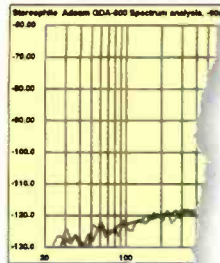


Fig. 3 Adcom GDA-600, crest factor (top); 1kHz tone at -9dB, 1/2-octave spuriae (dashed).

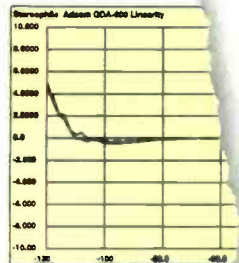


Fig. 4 Adcom GDA-600, crest factor (top); linearity (right channel), 2dB/vertical div.

## “Nothing less than a steal.”

—Robert Harley, *Stereophile*

There's something in this review of our GDA-600 digital-to-analog converter that the competition doesn't want you to see. Maybe it's the fact that the GDA-600 makes digital formats sound richer and more musical. Or that it has advanced 20 bit conversion architecture and a Class "A" analog output stage. But what they really don't want you to see is that the GDA-600 costs much less than you might expect. For the full review see *Stereophile*, Volume 17, No. 3, (March '94). Or, if your copy has been stolen, give us a call.

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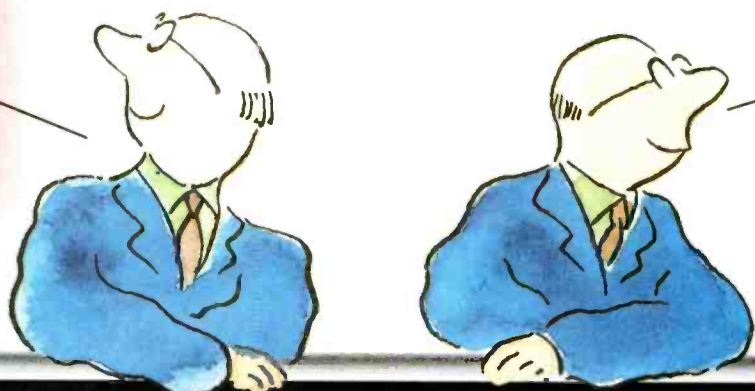
details you can hear

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CIRCLE NO. 3 ON READER SERVICE CARD



# TECH TALK

BY JULIAN HIRSCH

## Testing CD Players

The testing of CD players involves several paradoxical considerations. For one thing, any properly functioning CD player is likely to have performance characteristics that far surpass those of any other part of a music system. When the CD first appeared on the hi-fi scene, measurements were helpful for demonstrating that it completely transcended the existing performance criteria for tape and disc sources and their playback hardware. Although that issue has long since been settled, the audible significance of other characteristics of the medium continues to be a subject of controversy.

In our tests for *STEREO REVIEW*, we are primarily concerned with the process of establishing the key measurable characteristics of a CD player. The process is made possible by several test CD's. Almost all our measurements are made with either the CBS CD-1 or the Technics disc (a few others are used for specific tests).

We first use the CBS disc to measure the player's output voltage from a 0-dB (maximum level) 1-kHz signal. CD standards require this output to be 2 volts (or close to that), and most players measure between 1.9 and 2.1 volts. The same disc has a frequency-response test signal that sweeps, in about 1 minute, from 5 Hz to 22 kHz. Our Audio Precision System One plots the frequency response of both channels in that time, and the graph scales can be set to match any range of levels (usually well within  $\pm 0.1$  dB from 20 Hz to 20 kHz).

We use the Technics disc to measure channel separation. It has left- and right-channel tracks recorded separately at four frequencies from 100 Hz to 20 kHz. Playing these tracks plots the channel separation in both directions (left to right and right to left). The readings vary with direction and frequency, but we have never found a CD player whose crosstalk between channels approaches audible levels (such as -30 dB or less). More often it runs -90 dB or better.

We also use the Technics disc to measure 1-kHz harmonic distortion at levels from maximum to -90 dB and at 0 dB over a frequency range of 20 Hz to 20

kHz. Readings typically range between -60 dB (0.1%) and -90 dB (0.003%).

Some CD's are recorded with a mild high-frequency boost, or pre-emphasis, analogous to the pre-emphasis used in LP recording (although its noise-reducing function is not really necessary with CD's as it was with LP's). We do measure the accuracy of the player's de-emphasis circuit, although it is unimportant for playback of the great majority of discs. We also measure the A-weighted noise level in the player's output relative to the 0-dB maximum output. Like most of the other unwanted outputs (crosstalk, distortion, etc.), noise is almost invariably far below audibility, in the -90-dB range or lower.

Because it has received much attention since the development of so-called 1-bit digital-to-analog (D/A) converters, we measure the linearity error of the player's converters down to -90 dB. A few years ago, it was not uncommon to find errors

**A CD player should be able to correct for a momentary loss of data caused by a disc defect.**

of several decibels (in other words, a signal recorded at a -90-dB level might be played back at -95 or -85 dB). In practical terms, such discrepancies are not a serious problem, since few listening rooms are quiet enough to permit such levels to be heard. Still, it is easy enough to measure, which has led to the surprising discovery that almost any inexpensive 1-bit system will have perhaps 0.5 dB of error at -90 dB, while some much costlier units with more elaborate D/A converters may show a 2- or 3-dB error.

Some other measurements that are not necessarily important to most users are easy to make and occasionally reveal an unsuspected weakness. A good example is "speed" accuracy, referring to the crystal-controlled clock frequency that times the digital operations within the player. Normally the error is well under 0.01 per-

cent (often a tenth of that), which is entirely negligible. But I have found one case where the error was many times larger (not even meeting turntable standards), so I continue to make this test.

An important requirement for a CD player is that it be able to correct for a momentary loss of information, perhaps caused by a disc defect. One of the Pierre Verany test discs has a series of calibrated "errors" (loss of signal) ranging in size from 50 to 4,000 micrometers (0.05 to 4 millimeters). We note the largest error size that can be played successfully. Loss of data may merely produce a click, or in severe cases it may cause the player to hang up ("stutter") or shut down entirely. In general, ability to track through a 750-micrometer error is acceptable, through a 1,250-micrometer error typical; some players can cope with even a 2,000-micrometer gap.

Finally, we also establish the player's ability to track through external physical impact. While playing a disc, we tap the player on the top and sides of its case, increasing the severity of the impact until it audibly mistracks. If drumming with the fingers causes mistracking, we give it a C or D rating. Withstanding a slap with the palm earns a C or B, and if it takes a hard blow of the fist to cause mistracking, the player rates an A (few earn that rating!).

What do these tests have to do with how a player sounds or how long it will continue to function properly? Usually nothing at all. In the first case, every measurable distortion or imperfection of a well designed, *properly functioning* CD player (as opposed to a cheaply made or defective unit) is totally insignificant. In the second case, as with everything we (or anyone else) tests, nothing based on a test of a single unit (not even a catastrophic failure) tells us much about the reliability of other units of the same design. You have to base that judgment on the reputation of the manufacturer.

Finally, although some people claim to hear all sorts of differences between presumably high-quality CD players (even though they may measure virtually alike), I know of no case of a true double-blind listening test verifying the audibility of anything other than extremely small and inconsequential differences. Personally, I don't hear the big differences some claim to, and I don't know anyone who can prove that he does. Listen for yourself and make up your own mind. □



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Cambridge SoundWorks Ensemble satellite (but with magnetic shielding). \$149. Center Channel Plus uses an ultra-low, ultra-wide design that is ideal for placement above (or, with optional support stand, below) a TV monitor. \$219.

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## Center Channel Speakers

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CIRCLE NO. 6 ON READER SERVICE CARD



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The Best Value In Pro Logic Home Theater Systems from \$849

# TEST REPORTS



## Carver CT-29v A/V Tuner/Preamp

JULIAN HIRSCH • HIRSCH-HOUCK LABORATORIES

A full-featured audio/video receiver can be a formidably bulky and heavy component, especially if its amplifiers are fairly powerful. Until recently, there has been little interest in separating the component parts of an A/V receiver into low-level (tuner, control, preamp, and surround-sound sections) and power-amplifier units, as is commonly done with stereo components. Only a handful of such products are listed in the latest *Stereo Buyer's Guide*. But such a division, exemplified in Carver's CT-29v tuner/preamp, enables you to choose freely among amplifiers with much more power than is practical in even the largest A/V receivers.

The CT-29v heads the lineup of five Carver A/V preamplifiers. It includes Dolby Pro Logic circuits based on digital signal processing (DSP), a Movie Surround mode, Hall 1 and Hall 2 ambience-generation modes for music signals, and a Matrix mode for adding a spatial dimension to monophonic signals. The surround-channel signal

delay is adjustable between 0 and 90 milliseconds (ms) except in Dolby Pro Logic, where Dolby Labs restricts it to a range of 15 to 30 ms. Movie Surround provides the same sound-steering processing as Pro Logic but with the full delay range. There is also a three-channel surround mode (Dolby 3 Stereo, labeled "3 Logic") that enhances stereo signals without requiring surround speakers.

As a preamp and control center the CT-29v is very fully equipped: It has seven audio inputs, three video inputs (for a laserdisc player and two VCR's, each equipped with both composite-

and S-video connectors), and an external-processor loop. The outputs include line-level signals for left and right front speakers, two surround speakers, and a center speaker, as well as S-video and composite-video outputs for a video monitor. There is also a line-level subwoofer output with an internal 80-Hz, 18-dB-per-octave crossover and a small rear-panel level control. Tape-recording inputs and outputs permit dubbing any audio source to a tape deck and a video signal to either of two VCR's (without conversion between composite- and S-video formats, however). Other rear-panel connections enable the CT-29v to control a multiroom audio system—playing a different source in another room with independent volume control—but that requires an optional accessory (the Carver IR-R7 multiroom infrared receiver). The digital frequency-synthesis AM/FM tuner in the CT-29v has auto-scan and manual tuning modes and can store up to thirty preset station frequencies.

The supplied RH-29v infrared handset is of the "learning" variety, designed to memorize the control instructions for a CD player, analog and DCC tape decks, two VCR's, a TV set, and a laserdisc player. Although its seventy buttons appear formidable,

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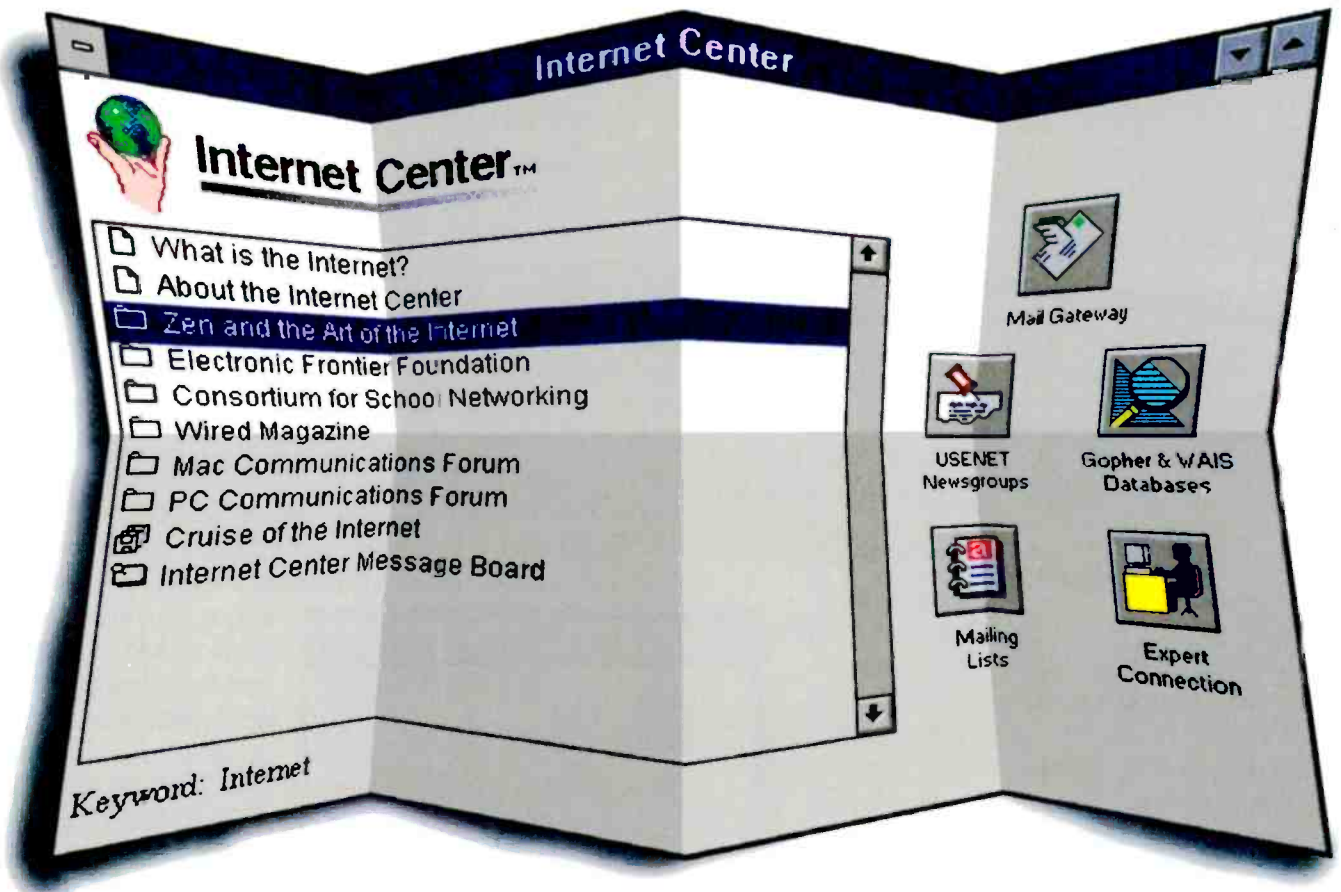
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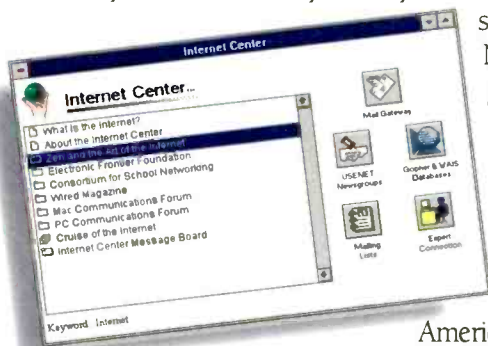
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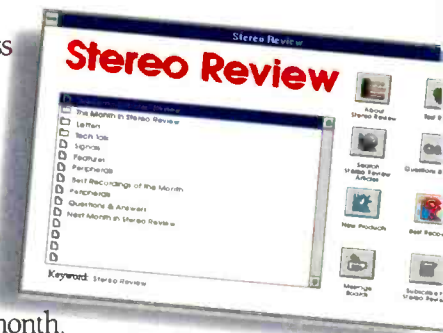


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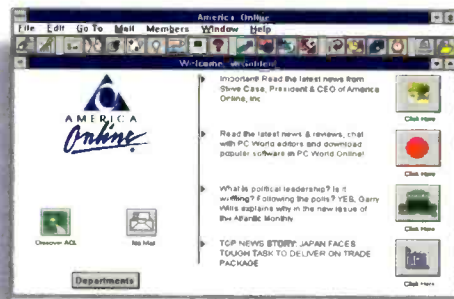
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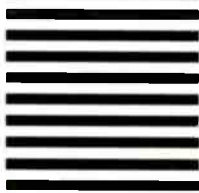


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# TEST REPORTS

only twenty of them are required to operate the CT-29v. The preamp's volume knob is motor-driven when operated from the handset.

More than sixty horizontally arrayed signal jacks populate the CT-29v's rear apron, including separate CATV and FM antenna inputs (both F-connectors) and terminals for an AM antenna. There are two AC outlets, one of them switched. The manual warns that the switched outlet should be used only for line-level components (like tape decks or CD players) and *not* for a power amplifier, the traditional use for such an outlet. The unswitched outlet can be used for a power amp so long as its power consumption (not the same as its power rating) does not exceed the 100-watt rating of the outlet.

The CT-29v's front-panel display window shows the usual information: the selected audio source and tuner frequency, signal strength and tuning mode, selected video source, etc. Although this display provides all necessary information on the unit's operating status, most of it can also be displayed on-screen, over the video program. To the window's right are two rows of small buttons, each about 1/8 inch in diameter. The lower row selects the program source, both audio and video, and the upper row selects the audio source for recording as well as the multiroom output. A row of buttons below the display is used for setting the tuner frequency and tuning mode and for storing station frequencies in memory. Ten closely spaced buttons select the memorized stations.

Along the bottom of the panel are four small knobs for tone control and balance adjustment. One of them, Vocal Zoom, adjusts the center-channel frequency response in the vicinity of 2 kHz in order to modify the sense of presence in vocals or dialogue. To the left are three small buttons (Auto, DSP mode, Delay time) and a row of ten tiny red LED's. The buttons select the DSP mode and the center-channel mode (normal, wide, or phantom). The power button and headphone jack are also located at the left side of the panel. Plugging a headphone into the jack mutes the main preamp outputs. The right section of the panel contains the

## MEASUREMENTS

### TUNER SECTION

All figures for FM only except frequency response

<b>50-dB quieting sensitivity</b>	
mono .....	15 dBf
stereo .....	35 dBf
<b>Signal-to-noise ratio</b> (at 65 dBf)	
mono .....	77 dB
stereo .....	68.5 dB
<b>Distortion</b> (THD+N at 65 dBf)	
mono .....	0.31%
stereo .....	0.46%
<b>Capture ratio</b> (at 65 dBf)	2.2 dB
<b>AM rejection</b>	65 dB
<b>Selectivity</b>	
alternate-channel .....	65 dB
adjacent-channel (asymmetrical) .....	11 dB
<b>Pilot-carrier leakage</b>	
19-kHz .....	-73 dB
38-kHz .....	-80 dB
<b>Hum</b>	-76 dB
<b>Channel separation</b>	
100 Hz .....	32 dB
1 kHz .....	43.5 dB
10 kHz .....	42 dB
<b>Frequency response</b>	
FM .....	20 Hz to 15 kHz +0, -0.65 dB
AM .....	45 Hz to 3.5 kHz +0, -6 dB

### PREAMPLIFIER SECTION

All figures for main front channels only except as noted

<b>Output at clipping</b> (1 kHz) .....	6.5 volts
<b>Distortion</b> (at 3.5 volts output) .....	0.01%
<b>Sensitivity</b> (for a 0.5-volt output)	
CD .....	55 mV
phono .....	0.9 mV
<b>A-weighted noise</b> (re 0.5 volt output)	
CD .....	-90 dB
phono .....	-86.5 dB
<b>Phono-input overload</b>	
(1-kHz-equivalent levels)	
20 Hz .....	71 mV
1 kHz .....	71 mV
20 kHz .....	71 mV
<b>Phono-input impedance</b>	
.....	48,000 ohms in parallel with 120 pF
<b>RIAA phono-equalization error</b>	
(20 Hz to 20 kHz) .....	±1 dB
<b>Frequency response</b> (with tone controls centered)	
.....	20 Hz to 20 kHz ±0.4 dB
<b>Tone-control range</b>	
100 Hz .....	±11 dB
10 kHz .....	±10 dB

large volume knob, which carries a green marker LED, a control that adjusts the volume in the remote room in multiroom mode, and a loudness-compensation button.

We measured the CT-29v's tuner and basic preamplifier functions in the conventional manner and judged its surround and DSP characteristics by listening to FM broadcasts and CD's. The preamplifier's frequency response from its CD inputs to the tape outputs was ruler-flat (within perhaps 0.01 dB) from 200 Hz to 20 kHz and down a mere 0.7 dB at 20 Hz. At the line outputs there was a slightly greater variation, probably caused by the tone-control circuits, but the overall response was still excellent.

Like the basic amplifier frequency response, the RIAA phono equalization was very accurate. The Vocal Zoom control varied the center-channel output at 2 kHz over a +6, -5 dB range at 2 kHz, with negligible effect below 500 or above 5 kHz. The other tone controls' characteristics were conventional, with a sliding bass turnover frequency and a hinged treble response. Most of the control action took place in the second half of the knob rotation. Following modern research, the loudness compensation boosted only the low frequencies (below about 200 Hz), by a maximum of about 11 dB at reduced volume-control settings.

The CT-29v's rated maximum output is 7 volts, which is several times what would be needed to drive any consumer power amplifier to its rated output. We were not unduly concerned, then, to find that the preamp output began to clip at 6.5 volts, since its total harmonic distortion plus noise (THD+N) was only about 0.01 percent at a still more than ample 3.5 volts output.

In general, the FM tuner section has adequate, though not outstanding, performance specifications, which our measurements confirmed. The AM tuner's audio bandwidth was restricted, rolling off to -6 dB at 3.5 kHz and at 45 Hz (which is considerably better than most others we have tested recently). The FM capture ratio was merely adequate, but the AM rejection, image rejection, and selectivity

# TEST REPORTS

were good. Stereo pilot-carrier leakage into the audio was very low, as was the power-line hum. The stereo FM distortion, though below audibility, was relatively high (distortion was lower in mono).

Although we used the CT-29v only as a stereo tuner/preamplifier, its operation was easy and straightforward. Its compact dimensions (about half the volume of a typical medium-power A/V receiver) and correspondingly manageable weight make it a space-saving alternative to a conventional A/V receiver with comparable features. There are a number of good multichannel power amplifiers on the market that would complement the CT-29v very well. Of course, it could also be used with two or three separate



stereo power amplifiers, which could be placed out of sight, leaving this compact and attractive control unit and any source components as the only visible parts of the system. You would, however, have to find a way to switch the power amps on and off independently instead of using the CT-29v's switched AC outlet.

The CT-29v is not inexpensive, and the necessary complement of power amplifiers would raise the total cost of a system built around it to that of a top-grade A/V receiver, but it is an attractive alternative. Not least among its advantages is a *subjective* simplicity to its operation that should make it more comfortable for most people to use than many of today's complex A/V receivers. □

## SECOND OPINION

### Carver CT-29V A/V Tuner/Preamplifier

**T**he Carver CT-29v's Dolby Pro Logic performance, both measured and heard, was very good. Noise and distortion were very low, and steering was accurate and sure. Measured separation was in all cases more than adequate. And, taking into account the level-calibration errors, our test unit happened to have an unusually accurate decoded surround-channel frequency response. As for those level-calibration errors, they seem to have split the difference between Dolby Labs' specifications and those of Lucasfilm's Home THX, and errors of this magnitude don't create gross surround-channel decoding problems.

I was less happy with some of the other surround-sound modes. The Movie setting, with its potential 90-millisecond delay to the surround speakers, is just an invitation to screw up a carefully balanced soundtrack with a distinct surround-speaker echo.

The two Hall modes both sounded rather boxy, especially with pop music. I would attribute that either to an insufficient number of artificial reflections or to their too-regular intervals. (Hall 1 is supposed to simulate a "circular" concert hall of medium size, probably the worst possible shape to model for classical music.) Matrix is easily the best general-purpose music-enhancement mode the CT-29v provides, although,

since it sends only a delayed difference (L - R) signal to the surrounds, it is also the least ambitious.

The remote handset was easy to use, with the preamp-oriented buttons clustered near the bottom, the master volume buttons larger and prominently placed. My chief complaint is that you have to cycle through several surround modes to get to the one you want or to plain two-channel stereo, which makes direct pre/post-processing comparisons impos-

sible. I would have gladly given up the remote's center-mode button in order to have that capability. Finally, even my small fingers found the tuner-preset buttons on the front panel too small and closely spaced for reliable operation.

On the whole, despite its minor ergonomic glitches—which you may not even find objectionable—I liked the Carver CT-29v, not least for its readable manual and its subtle but unforbidding high-tech appearance. —David Ranada

## DOLBY PRO LOGIC PERFORMANCE

All measurements were made with the normal center-channel setting except frequency response and channel separation, which were made with the wideband setting using MLS techniques.

### Frequency response

left, right ..... 20 Hz to 20 kHz +0.4, -1.4 dB  
center ..... 20 Hz to 20 kHz +0, -1.3 dB  
surround ..... 35 Hz to 7 kHz, ±3 dB

### A-weighted noise (re 0.5 volt output)

left, right ..... -83 dB  
center ..... -81 dB  
surround ..... -75 dB

### Distortion (THD+N at 1 kHz)

left, right ..... 0.02%  
center ..... 0.03%  
surround ..... 0.23%

### Surround decoder input-overload levels (re 0.5 volt output at 1 kHz)

left, right ..... +19.7 dB  
center ..... +18.5 dB  
surround ..... +18.4 dB

### Surround-channel noise-reduction calibration error

re Dolby spec (247.5 mV) ..... -1.9 dB  
re Home THX spec (141.4 mV) ..... +3 dB

### Channel separation (100 Hz to 7 kHz)

left output, right driven ..... >51 dB  
left output, center driven ..... >31 dB  
left output, surround driven ..... >45 dB  
center output, left driven ..... >50 dB  
center output, surround driven ..... >42 dB  
surround output, left driven ..... >58 dB  
surround output, center driven ..... >61 dB



As virtually every speaker manufacturer rushes to deliver "home theater" speakers to the marketplace, M&K amasses nearly twenty years of experience in the field—dating back to Hollywood screening-room installations in the 1970s.

M&K engineers have

spent well over a decade studying the varied aspects of surround

sound—including encoding and decoding; soundtrack recording; and the differences between reproducing sound in theaters and in homes.

M&K speakers excel in the reproduction of *all* source material. Accuracy, low coloration, pinpoint imaging, wide dynamic range, and deep-bass reproduction are all critical for music as well as film soundtracks. M&K Satellites and Subwoofers have been acclaimed for these attributes since the '70s.

And this is why M&K knows that any speaker that claims to be optimized for either music or film sound, one at the expense of the other, will never reproduce *either one* properly.

### M&K Home Theater Systems

Conventional speakers make the music and effects on film soundtracks compressed and dull. But M&K's exciting dynamics and "quick" transients give you precise 3-D imaging and a lifelike presence.

M&K Satellites are *timbre-matched*, using virtually identical speaker drivers, crossovers, and frequency response, for a seamless 360° surround-sound performance. With an all-M&K home theater system, voices and effects do not change char-

acter when their sound moves from left to right or front to back in your room.

Even if you are just adding an M&K subwoofer, front/center, or surround



**M&K  
COMPONENT  
SPEAKERS  
FOR THE  
HOME  
THEATER**

speaker to your present system, M&K's unique timbre controls allow you to "fine-tune" the sound of your new M&K speakers to achieve the closest possi-

ble timbre-match with your existing speakers—ever if they are not M&Ks.

### M&K Center Channel Speakers

Beware of inexpensive "center channel" speakers. In Pro-Logic, the center channel speaker is given the hardest, and often reproduces as much sound as the left and right speakers combined.

Each one of M&K's six individually-available Satellites has exceptional dynamic range and high output to meet and exceed the tremendous demands of the center channel.

### M&K Powered Subwoofers

Legendary for their massive output, exceptional detail, and articulation, M&K's thirteen internally-powered Subwoofers set the industry's standards for high-performance deep bass.

M&K's innovative Push-Pull Dual Driver subwoofers deliver a major improvement by virtually eliminating even-order harmonic distortion, *and* doubling efficiency (same as doubling amplifier power) with four times the output of single driver subwoofers.

Whether you choose our state-of-the-art Home THX® Audio speaker system, an add-on set of surround speakers, or anything in between, no other speakers will give you the exciting performance, sound quality, flexibility and compatibility of M&K's home theater component speakers.



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# TEST REPORTS



## Marantz CD-63 Compact Disc Player

JULIAN HIRSCH • HIRSCH-HOUCK LABORATORIES

**T**he Marantz CD-63 is a versatile, moderate-price CD player featuring a number of technical innovations that contribute to its performance. These involve developments that affect both disc tracking and basic audio quality.

The CD-63's newly designed transport mechanism puts the laser-diode and detector units into the same housing for more precise tracking, and it has a precision glass lens for improved disc-reading ability. The laser assembly is focused on the microscopic recorded pattern by a digital servo system that is said to provide better tracking than conventional analog systems, especially with old CD's that may have accumulated surface scratches.

The player also has an output amplifier made of discrete parts instead of the usual integrated circuit, a departure from convention that is claimed to provide improved analog signal reproduction by virtue of its high slew rate and low noise. Dual Bitstream 1-bit digital-to-analog (D/A) converters together with eight-times-oversampling digital filters drive the output amps to minimize low-level nonlinearity (rated at less than 0.5 dB at -90 dB). The player's other audio specifications are equally impressive.

There's a host of operating features, but they are implemented in a user-friendly manner, without a cluttered front panel or any confusing control functions. The basic transport operation is conventional, with three large square buttons for stop, play, and pause and two thin rocker-type buttons for fast scan and track skip in either direction. Ten buttons in a row below the display give direct numerical access to any track and can select or delete tracks for programmed operation.

The disc drawer at the left of the panel glides out and in on alternate touches of the adjacent open/close button. When a disc is first loaded, large numerals in the central display window show its total number of tracks and playing time. A horizontal row of smaller numerals along the bot-

tom of the display shows the available track numbers (up to No. 20), and words or numbers appear as required to show the operating status of features such as track programming.

Six small gold-colored buttons to the right of the display window operate the CD-63's special features. The time button toggles the display between elapsed and remaining time in the current track or on the disc as a whole. A dimmer button changes the level of display illumination through four steps between maximum (normal) and barely visible. The program button is used to select specific tracks (to a maximum of thirty) to be played in any order or omitted from playback.

The edit button has several functions. It can fit tracks onto a specified tape length while maintaining their original order, or it can be used in conjunction with the programming functions to fit tracks (in any order) on a tape side. The edit button also aids in recording to cassette by making a high-speed search of an entire disc (or any portion to be taped) to locate the peak signal levels. The CD-63 then plays four repetitions of a 4-second portion of the CD centered on the peak-level passage, during which time you can set the tape deck for the desired maximum recording level. The operation of the CD player and a compatible Marantz tape recorder can also be synchronized by a cable connection between them.

The CD-63's rear apron contains the

#### DIMENSIONS

16 $\frac{3}{4}$  INCHES WIDE, 3 $\frac{3}{4}$  INCHES HIGH,  
12 $\frac{1}{4}$  INCHES DEEP

#### PRICE

\$399

#### MANUFACTURER

MARANTZ AMERICA, INC., DEPT. SR,  
440 MEDINAH RD., ROSELLE, IL 60172





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# TEST REPORTS

analog audio output jacks, both a coaxial and an optical (Toslink) digital output, and connectors for operation with other Marantz components having their own infrared remote controls. A small slide switch disables the CD player's remote-control system when an external control is selected.

The player's remote has no power switch, but it duplicates all of the other front-panel controls and adds repeat (one track, the entire disc, or any selected segment), random-order playback of all tracks on the disc, and Automatic Music Scan (AMS), which plays the first 10 seconds of every track on the disc.

The remote control also has up/down volume buttons that vary the level at the line and headphone outputs over a 30-dB range, from the maximum level downward. Without a deliberate change from the remote control, the maximum level appears at both outputs and could be undesirably loud for headphone listening.

Our measurements of the Marantz CD-63 confirmed its excellent performance. Frequency response was very flat (within  $\pm 0.05$  dB) from 12 Hz to 11 kHz and down a mere 0.25 dB at 20 kHz. Channel separation, though somewhat different for the left/right and right/left directions, exceeded 100 dB up to 2 kHz in one direction and up to 20 kHz in the other, more than sufficient for audibly complete separation. The D/A linearity error and distortion results also were excellent.

Other measurements were equally noteworthy. Power-line hum (almost entirely 60 Hz) was 100 to 110 dB below maximum signal level. The player's analog output from a 0-dB test recording was 2.35 volts, slightly (1.4 dB) more than the conventional 2 volts. Of course, that level can be reduced by as much as 30 dB (to about 80 millivolts) by the remote level-adjustment feature.

Marantz makes a point of the improved tracking stability afforded by the CD-63's new transport mechanism. We confirmed its resistance to impact on the exterior of the cabinet, finding that rather hard slaps on the top or sides were needed to cause audible mistracking. The player did not fare quite as well, however, with the



### MEASUREMENTS

<b>Maximum output level</b> .....	2.35 volts
<b>Frequency response</b> .....	+0.05, -0.25 dB, 20 Hz to 20 kHz
<b>Channel separation (worst case)</b>	
100 Hz .....	102 dB
1 kHz .....	102 dB
20 kHz .....	90 dB
<b>Dynamic range</b> .....	98 dB
<b>Quantization noise</b> .....	-92 dB
<b>Distortion (THD+N)</b>	
1 kHz (-70 to -10 dB) .....	0.0025%
20 Hz to 2 kHz (0 dB) .....	0.003%
20 kHz .....	0.03%
<b>Linearity error (at -90 dB)</b> .....	0.5 dB
<b>Max. interchannel phase shift</b> .....	0.25°
<b>Defect tracking</b>	
(Pierre Verany #2 disc) .....	see text
<b>Impact resistance (top and sides)</b> .....	A
<b>Cueing time (track to track)</b> .....	3 seconds

calibrated information-layer errors of the Pierre Verany #2 test disc. Beginning at the 500-micrometer level, occasional soft "ticks" indicated momentary loss of tracking, which probably would not be audible with most music (the test uses a steady high-level tone). The soft ticks continued, with no apparent increase in audible severity, up to and including the 1,500-micrometer level. But at 2,000 micrometers (a serious information gap), the tracking failed entirely, causing the laser to "hang up" and remain at one point on the disc, not an uncommon occurrence with that amount of disc damage.

All in all, Marantz's CD-63 is certainly a fine value, with a rare combination of state-of-the-art performance, a high degree of versatility and ease of use, readable and complete instructions, handsome styling, and an attractively moderate price. We found little to fault in its operation or performance. □

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- WI - Absolute Sound & Vision; Sheboygan; Audio Emporium; Milwaukee; Sound World; Wausau.
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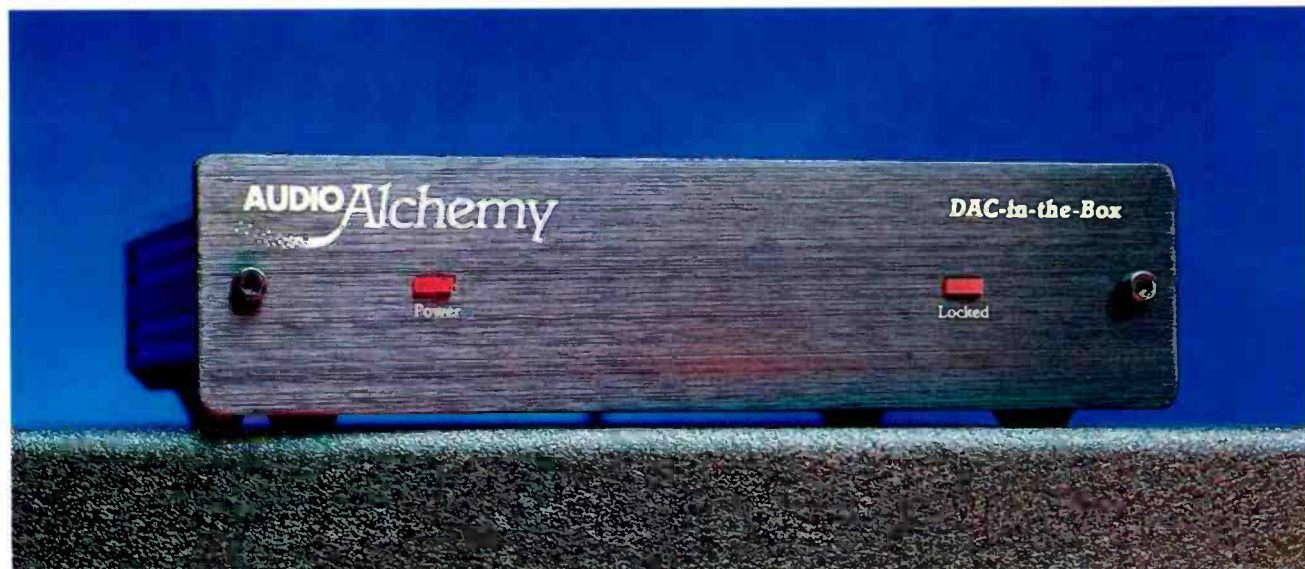
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# TEST REPORTS



## Audio Alchemy DAC-in-the-Box Digital-to-Analog Converter

DAVID RANADA • TECHNICAL EDITOR

If you have doubts about the performance of the digital-to-analog converters (DAC's) in your CD or laserdisc player—because they are too old to have benefited from recent improvements in DAC design, or because they incorporate some signal processing of dubious value—you might consider replacing them with Audio Alchemy's DAC-in-the-Box (DITB, for short). It's a neat, even cute little device that hooks up to a standard digital output with either a coaxial cable or an optical connector. And it is by far the least expensive outboard D/A converter we have encountered.

Actually, "DAC-in-the-Box" is somewhat of a misnomer, since the device contains two separate 18-bit integrated-circuit D/A converters, one for each channel. These chips are of the traditional "ladder" or "R-2R" variety, not the newfangled 1-bit type. A single dual-channel eight-times-over-sampling digital filter drives both DAC's with 18-bit data. The filter gets

its input from a standard digital-interface chip. And that's about it, apart from miscellaneous chips and other parts tying together the principal integrated circuits (known in the business as "glue" circuitry), the analog output amplifiers, and the de-emphasis network (for playback of digital recordings made with pre-emphasis).

Hookup is as simple as the circuitry. The audio outputs are standard gold-plated phono jacks, as is the coaxial digital connection. The optical connector is of the standard Toslink variety. Audio Alchemy says that the DAC-in-the-Box will accept digital

signals with sampling rates between 30 and 50 kHz, a range that covers all consumer digital formats. A front-panel LED lights when the circuitry has locked onto the incoming data. Power enters the unit from a small modular power supply through a triple-conductor mini-phone connector.

The distancing of the power module from the converter circuitry made possible by its 6-foot cord is probably partly responsible for the DAC-in-the-Box's extremely low hum output. Using the optical input, our spectrum analysis showed absolutely no power-line components above the unit's inherent noise level, which itself was extremely low. To keep hum and other spurious signals from contaminating the audio, I'd recommend using the optical connector instead of the coaxial (if you can find the necessary fiber-optic cable); a coaxial hookup can pick up or radiate noise that may then leak into the audio outputs.

Nearly all the other conventional measurements we made with 16-bit signals showed very good to excellent performance. Frequency response, for example, was extremely flat, and the device had a superbly smooth de-emphasized response (with an inaudible +0.06 dB rise at 10 kHz followed by an equally inaudible fall to just -0.22 dB at 20 kHz). Signal-to-noise ratio (S/N) and dynamic range, as measured

PHOTO: JOCK P. LEUNG

### DIMENSIONS

5½ INCHES WIDE, 1½ INCHES HIGH, 4 INCHES DEEP

### PRICE

\$199

### MANUFACTURER

AUDIO ALCHEMY, DEPT. SR, 31133 VIA COLINAS  
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# TEST REPORTS

by standard techniques, were also very good. Any noise you might hear on music will come from the recording, not the DAC-in-the-Box.

The only conventional-measurement anomaly—and a minor one, at that—was the low-level converter nonlinearity, which exceeded +1 dB at -79.3 and -84.2 dB in the left and right channels, respectively. Compared with results for other DAC circuitry we have measured recently (mainly 1-bit converters in CD and laserdisc players), those are relatively high signal levels for a deviation of that magnitude to occur. The linearity measurement probably could have been improved if Audio Alchemy had utilized the DAC chips' trimming provisions (which are left unconnected in the DAC-in-the-Box).

Then again, the linearity errors occurred at what are, in absolute terms, very low levels, and they were not audible as such. One byproduct of the nonlinearity was slightly higher than average distortion, but spectrum analysis showed that the distortion products were also so low in absolute level as to be inaudible even with test tones, let alone music, when reproduced at reasonable listening levels.

We also ran several nonstandard tests using signals not found on commercial CD test recordings (see "Measurements"). Signal-to-dither ratio represents the true background noise of a digital-to-analog converter. The traditional S/N measurement is based on an all-zero digital test signal that is not representative of the minimum noise of a theoretically perfect recording (which must contain distortion-eliminating dither noise). The DAC-in-the-Box's performance in this test was very good.

Another nonstandard test involved feeding DC (a constant numerical value) to the DAC-in-the-Box's input to see whether it would respond with a constant DC output voltage. It did, up to a maximum of about 3.5 volts output at maximum digital input level. If a recorded digital signal contains a DC offset or other such constant-value data, DAC-in-the-Box will faithfully reproduce it. That suggests DAC-in-the-Box is perhaps best not used with the rare preamp or amplifier having di-

## MEASUREMENTS

All measurements were made with digitally generated 16-bit signals at a sampling rate of 44.1 kHz fed to the optical input.

<b>Maximum output level</b> .....	2.45 volts
<b>Frequency response</b> (20 Hz to 20 kHz)	
normal .....	+0, -0.16 dB
de-emphasized .....	+0.06, -0.22 dB
<b>Channel separation</b>	
100 Hz .....	72 dB
1 kHz .....	72 dB
20 kHz .....	61 dB
<b>Signal-to-noise ratio</b> (A-wtd.) .....	110 dB
<b>Signal-to-dither ratio</b> (A-wtd.) .....	95.8 dB
<b>Dynamic range</b> .....	107.5 dB
<b>Distortion</b> (THD+N at 0 dB)	
20 Hz to 20 kHz .....	0.007%
<b>Linearity error</b> .....	+1 dB at -79.3 dB
<b>Max. interchannel phase shift</b>	
at 18 kHz .....	-1.4°
<b>Max. unclipped square wave</b> .....	-2 dB

rect-coupled inputs (that is, no DC-blocking capacitor at the input).

More workaday was the converter's performance on the square-wave clipping test, which reveals the maximum square-wave amplitude that can be

reproduced without clipping of the "ringing" in the waveform (yes, correct reproduction of the test signal should contain ringing). Such clipping is extremely common in devices with digital filters, but unless it's severe I don't think it has any significant musical consequences.

Although Audio Alchemy rates the DAC-in-a-Box's "resolution" as 18 bits, measurements using 18-bit signals (digitally generated by our Audio Precision System One test set) demonstrated poorer linearity than those with 16-bit signals. At -100 dB the linearity error for a 16-bit signal was still a good +2.5 dB, but for an 18-bit signal it almost quadrupled, reaching +9.25

dB. This quirk probably arises from the particular digital filter chip used in the DAC-in-the-Box. Although it will put out 18-bit data, it will accept only 16-bit signals; 18-bit input data is apparently truncated to 16 bits before being processed. Although numerical truncation is one of the worst things you can do to a digital audio signal, this behavior need not concern you unless you have access to 18-bit digital data. So far the only consumer sources capable of putting out 18-bit digital signals are DCC decks.

I enjoyed using the DAC-in-the-Box. It's about as easy to hook up and operate as a piece of audio equipment can get. I also know that it's solidly built and rather rugged, our test sample having survived a couple of accidental falls from my desk to the (carpeted) floor with no change of performance. The circuit itself contains no adjustments to slip.

Furthermore, try as I might, I could hear no difference between its sound (reproducing music at normal-to-loud levels) and the sound produced by a CD player incorporating topnotch 1-bit D/A converters—that is, no difference not attributable to the DAC-in-

**The distortion products were so low in level that they were inaudible even with test tones, let alone music, when played at reasonable volumes.**

the-Box's higher output level. With a 2.45-volt maximum output, the DAC-in-the-Box plays some 1.75 dB louder than a typical 2-volt-output CD player with the same input data, a difference that, if not compensated for, would tend to throw any listening comparison in its favor. Not to worry, though—the DAC-in-the-Box doesn't need such assistance to come off well in a listening test. The performance of this compact and refreshingly economical digital-to-analog converter leaves little to be desired. For almost anyone needing a high-quality external D/A converter at a reasonable price, Audio Alchemy's DAC-in-the-Box is going to be hard to beat. □

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size."



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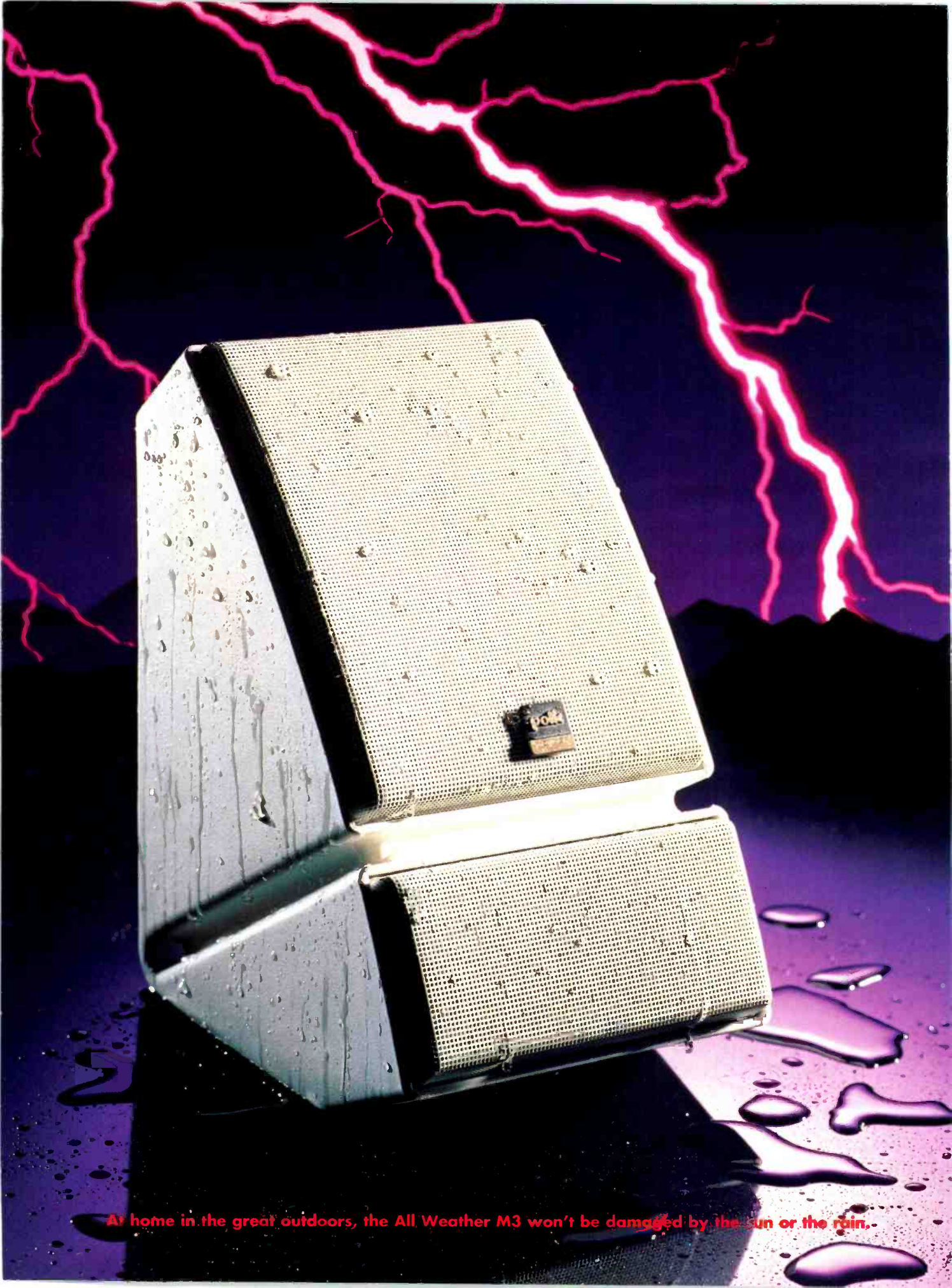


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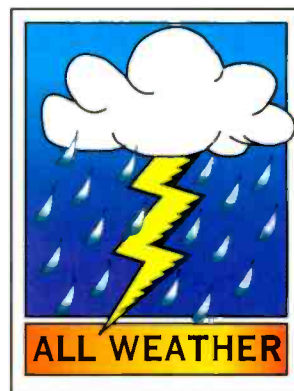


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## TEST REPORTS



### Phase Technology 7T Loudspeaker System

**JULIAN HIRSCH • HIRSCH-HOUCK LABORATORIES**

**P**hase Technology's 7T loudspeaker was specifically designed for use in home theater installations. The company says that in such a setting the 7T's precise imaging and soundstage allow it to be used, at least initially, without a center-channel speaker (normally an important component of a good home theater system).

A two-way system, the 7T has an 8-inch polypropylene-cone woofer operating in a ported enclosure and crossing over (at an unspecified frequency) to a 1-inch soft-dome tweeter. The tweeter rim is surrounded by an absorbent ring to minimize diffraction and enhance imaging accuracy. The system's impedance is given as 8 ohms and its overall frequency response as 40 Hz to 20 kHz  $\pm$ 3 dB. With a rated bass response down only 3 dB at 40

Hz, the system is said to be usable without a subwoofer. For optimum results, of course, both a center-channel speaker and a subwoofer are desirable in a home theater installation (Phase Technology manufactures compatible speakers of both types). The 7T's sensitivity is rated as 90 dB, slightly higher than the average speaker.

The speaker's cabinet weighs about

#### **DIMENSIONS**

36½ INCHES HIGH, 10 INCHES WIDE,  
12 INCHES DEEP

#### **PRICE**

\$550 A PAIR IN BLACK, \$590 IN OAK

#### **MANUFACTURER**

PHASE TECHNOLOGY CORP. DEPT. SR, 6400  
YOUNGERMAN CIRCLE, JACKSONVILLE, FL 32244

# TEST REPORTS

45 pounds and has rounded edges, presumably to reduce edge diffraction. The tweeter is near the top of the front panel, with the woofer just below it and the port near the bottom. A black cloth sleeve covers the entire exterior of the cabinet except for its wooden base and top plate, which are finished in black or oak. The top plate is easily removed in order to roll down the sleeve, which is retained by Velcro snaps. The input connectors—multi-way binding posts that accept dual banana plugs, stripped wires, or lugs—are recessed into the bottom of the speaker so that the cabinet presents a finished appearance on all visible surfaces.

The measured room response of the Phase Technology 7T, using a sweeping warble-frequency sine wave, was impressively uniform, with an overall level variation of  $\pm 4$  dB from 60 Hz to 20 kHz. The close-miked woofer response was equally noteworthy, within  $\pm 3$  dB overall from 40 Hz to 1.1 kHz. The port's contribution was dominant below 45 Hz and extended to our 20-Hz lower measurement limit.

The speaker's composite frequency response (an artificial construct from the room and close-miked bass-response measurements that indicates the *potential* frequency-response capability of a speaker rather than its actual performance in any specific room) was among the widest we have measured,  $\pm 3$  dB from 20 Hz to 17 kHz except for a 4-dB dip in the 10-kHz region. Measurements with a swept one-third-octave random-noise signal made on the speaker's axis and 45 degrees off-axis showed a divergence between the two above 4 kHz, with the off-axis response down by 6 dB at 10 kHz and 15 dB at 20 kHz relative to the on-axis response. Quasi-anechoic MLS frequency-response measurements confirmed the essential features of the room measurements.

The speaker's impedance reached its minimum of 5.5 ohms at 28 and 140 Hz. There was a bass peak of 16.7 ohms at 53 Hz and a broad treble peak of 21 ohms at 1.8 kHz. Above 400 Hz the impedance remained well over 8 ohms.

Sensitivity measured 89 dB sound-pressure level (SPL) at 1 meter with a

2.83-volt input, close to the rated 90 dB. With a drive level of 3.18 volts (equivalent to a 90-dB SPL), the woofer distortion from 50 Hz to 2 kHz ranged between 0.6 and 1.4 percent, averaging about 1 percent. It increased to 5 percent between 20 and 30 Hz. These are rather low distortion levels.

The speaker also had ample power-handling ability. Driven by a single-cycle sine-wave burst at 100 Hz, the woofer was able to absorb 920 watts (the clipping point of the test amplifier) without damage or audible indications that its woofer's suspension limits were being exceeded. At that level, the output waveform was distorted but not severely clipped. At 1 and 10 kHz the amplifier clipped (at respective power levels of 360 and 730 watts) before the speaker showed signs of distress.

In listening tests, the Phase Technology 7T lived up to the manufacturer's claims in full measure. The soundstage and spatial imaging were as good as we have heard in our listening room, and the system's frequency balance was exceptional. The absence of unnatural boom or chestiness in the upper bass and lower midrange was striking, especially in view of the speaker's claimed (and measured) extended bass response.

When listening for enjoyment (as opposed to evaluation) to most compact or moderately priced speakers, we normally use a pair of subwoofers to fill in the (usually) missing deep-bass range below 40 Hz. But with the Phase Technology 7T, the *only* times the subwoofers made an audible improvement were when we played a few CD's of pipe organs and pure-tone test discs at frequencies below 32 Hz. For listening to most music adding a subwoofer to a pair of 7T's would be gilding the lily.

There are a number of very good speakers in the 7T's price range, but few can challenge its combination of spatial accuracy, wide-range response, and attractive appearance. We agree with Phase Technology that it could do a fine job all by itself in a home theater system, and in a music-only system as well. Phase Technology's 7T is one of the best buys in today's speaker market. □

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BY HENRY KLOSS



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# The magazine that knocks you on your ear



It used to be simple. You had a car. It came with a radio. You listened. Period. Now you've got options. So many options, it's easy to get blown away just trying to find components that fit together—and fit your budget too. So what do you do when it's time to upgrade your car stereo?

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# TEST REPORTS



## Snell Type D Loudspeaker System

JULIAN HIRSCH • HIRSCH-HOUCK LABORATORIES

Although it is not Snell's most expensive speaker, the Type D has been designed and manufactured to the same exacting standards as the company's most costly models. For example, the response of each driver is matched—by adjusting the crossover-circuit parts values—to that of a master reference speaker to within 1 dB.

Part of the Type D's low cost and small size compared to other Snell speakers comes from its using "only" an 8-inch woofer in a bass-reflex en-

<b>DIMENSIONS</b>
10½ inches wide, 43 inches high, 12½ inches deep
<b>FINISH</b>
WALNUT, LIGHT-OAK, OR DARK-OAK VENEER, OR BLACK
<b>PRICE</b>
\$1,699 A PAIR
<b>MANUFACTURER</b>
SNELL ACOUSTICS, DEPT. SR, 143 ESSEX ST., HAVERILL, MA 01832

closure. The woofer is located at the midpoint of the front panel, with its vent opening near the bottom of the rear panel. At 350 Hz there is a crossover to a 5-inch midrange driver located just above the woofer. Both drivers have powerful magnetic systems and polypropylene cones. The second crossover, to a 1-inch titanium-dome tweeter near the top of the speaker panel, is at 2.8 kHz.

For all practical purposes the Snell Type D is a three-way system, but there is a fourth driver. Located near the top of the back panel is a 1-inch rear-facing soft-dome "supertweeter" that helps to maintain a uniform acoustic power response throughout the listening room. Such rear-radiating tweeters are something of a trademark of Snell speakers.

Near the bottom of the rear panel are two pairs—separate for the woofer and tweeter sections—of recessed, insulated, five-way binding-post input connectors. The binding posts are normally parallel-connected by gold-plated jumpers. Removing the jumpers enables the system to be operated in a bi-wired or bi-amplified mode. Near the input connectors are a tweeter-protection fuse, a level adjustment for the front tweeter (with an indicated flat setting), and a switch to turn the rear tweeter on or off.

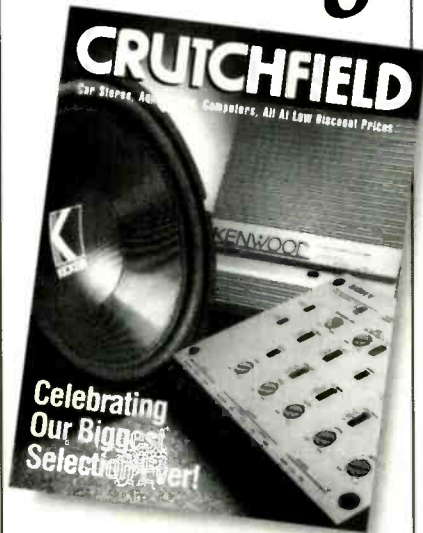
Snell rates the system's impedance as 5 ohms and its frequency response as 36 Hz to 20 kHz  $\pm 1.75$  dB, an unusually narrow deviation spec. The rated sensitivity is 87 dB SPL (sound-pressure level) at 1 meter with a 2.83-volt input.

The Type D's cabinet is finished on the top and sides in matched-grain, hand-sanded and hand-oiled wood veneer or plain black. The front and rear panels are finished in flat black, and a removable black cloth grille covers the entire front of the system. The panel section containing the midrange and high-frequency drivers is surrounded by ¾-inch-thick felt to minimize edge diffraction that could degrade the uniformity of sound distribution in the room. The Snell Type D comes with optional spiked feet to form a positive contact with the floor. Each speaker weighs 65 pounds.

Averaged for the two speakers, the

PHOTO: JOCK P. LEUNG

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# TEST REPORT

room response was exceptionally uniform over most of the audio range, within  $\pm 3$  dB from 100 Hz to 20 kHz (and better than  $\pm 1.5$  dB from 100 Hz to 6.5 kHz). The close-miked woofer response spliced easily to the room curve, resulting in a composite frequency response of  $\pm 3.5$  dB from 20 Hz to 20 kHz (including a slight rise at about 15 kHz, perhaps due to the rear-firing supertweeter).

The quasi-anechoic MLS frequency response confirmed the system's extraordinarily uniform output, with only a  $\pm 1$ -dB variation from 550 Hz to 11.5 kHz. The rear-mounted tweeter's output was limited to the uppermost octave, between 10 and 20 kHz, with its maximum at about 12 kHz.

The speaker's impedance reached its minimum of about 3.7 ohms at 90 Hz and 10 kHz, with peaks of 14 ohms at 50 Hz and 13 ohms at 5 kHz. The measured sensitivity of 88 dB closely matched the 87-dB rating. At a constant input of 3.5 volts, corresponding to a 90-dB reference-output SPL, the woofer's distortion was a minimum of 0.4 percent at 250 Hz, under 1 percent from 90 to 370 Hz, and only 7 percent at 20 Hz. The mid-range driver's distortion at the same input level was about 0.5 percent over most of its operating range, reaching 1 percent at 200 Hz and 3 kHz.

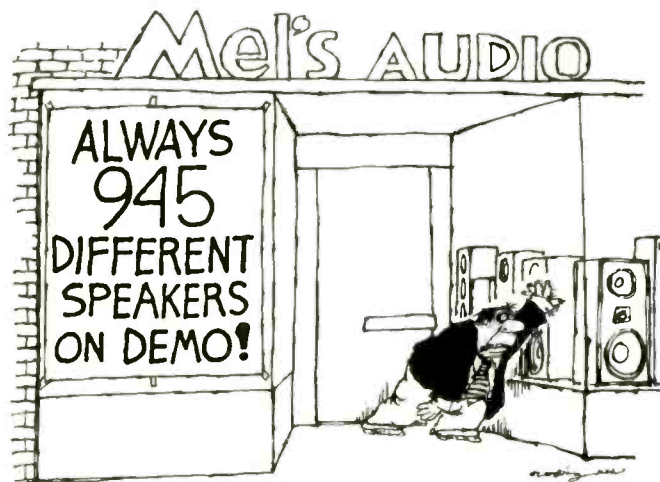
Horizontal dispersion over a  $\pm 45$ -degree angle off the speaker's forward axis was exceptional: Off-axis output was down less than 1 dB up to 6 kHz, 2.5 dB at 10 kHz, and only 5 dB at 20

kHz. Phase linearity was notable, too, with a group-delay variation of only  $\pm 100$  microseconds from 2 to 20 kHz.

The Snell Type D also proved to be more than a match for our pulse-power tests. Single-cycle sine-wave bursts clipped the driving amplifier (at outputs from 685 watts at 100 Hz to 1,650 watts at 10 kHz) before the speaker showed any significant signs of audible distress (or, of course, damage).

Listening tests, including side-by-side comparisons with other high-quality speakers in the same general price range, showed that the Snell Type D sounded every bit as good as it measured. Not surprisingly, in view of its exceptionally flat response, the Type D had a very neutral and uncolored sound, especially through the lower midrange, with a surprisingly deep bass extension considering its single 8-inch woofer. Its 31.5-Hz output (from a CD test disc) was clean and room-shaking, and even a 20-Hz signal produced a slight sense of deep bass without the cone-rattling or other evidence of distortion that occurs with many other speakers.

Some other speakers may have a slightly brighter high treble than the Snell Type D, or a stronger low bass (below 30 Hz), but it would be hard to find one anywhere near its price that can deliver a less colored or a cleaner and smoother overall sound. While it is not exactly cheap, it is nevertheless an excellent value and not easily surpassed without spending well above \$2,000. □





Most loudspeakers touted for "Home Theater" are little more than patched up audio models. That's because most speaker manufacturers don't build their own drivers, the components that produce the sound. Instead, they buy off-the-shelf parts and struggle to reconfigure them for Home Theater.

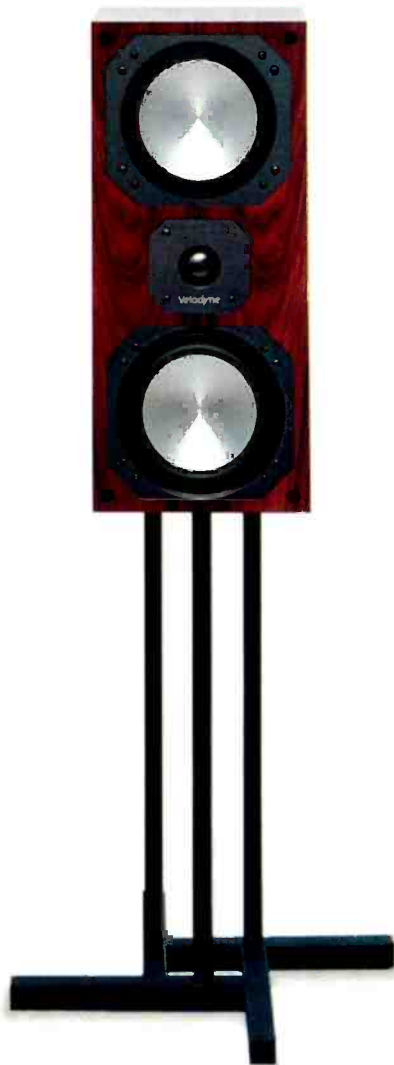
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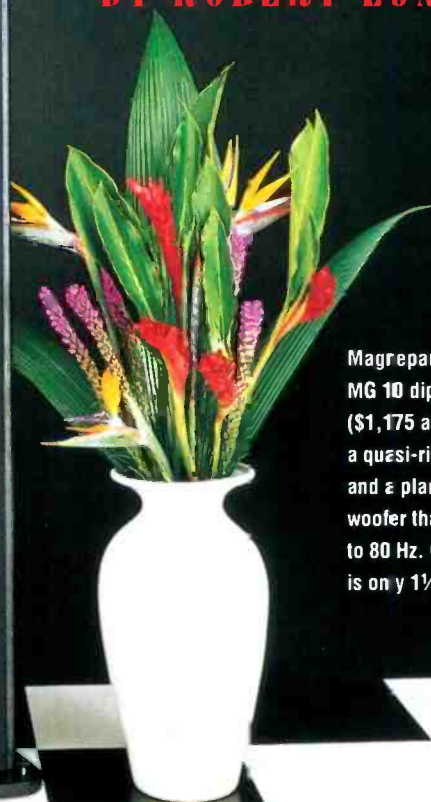
# SAMPLING SPEAKERS

**I**t's more than just a cliché: Loudspeakers *do* have more influence over how your system sounds than any other element in the audio chain. Not only that, but deciding what's good or bad about a speaker's sonic character is the most subjective judgment you're likely to make in choosing components. So the methods you use in shopping for speakers are both crucial to the overall quality of your system and radically different from those you may have used successfully in selecting other components.

For one thing, speaker literature is often difficult to understand and doesn't necessarily tell you much about how a given model will sound. In the case of a CD player, a flat response curve is both desirable *and* directly related to what you hear. And it's believable. But if the brochure for Speaker X shows a ruler-flat response curve, you would be entirely justified in questioning the company's veracity. And no matter how flat or mountainous a curve may be, you would be equally correct to question how it was measured: in what sort of environment, with what sort of

How to put some method  
in the madness of  
loudspeaker shopping

**BY ROBERT LONG**



Magrepan's 5-foot-tall MG 10 dipole speaker (\$1,175 a pair) employs a quasi-ribbon tweeter and a planar-magnetic woofer that plays down to 80 Hz. Cabinet depth is only 1¼ inches.

Cambridge SoundWorks' Ambiance In-Wall speaker (below, \$329 a pair) teams a 6½-inch woofer and a wide-dispersion tweeter in a 3¾-inch-deep enclosure.



Thiel's new 33-inch-tall CS1.5 (above, \$1,990 a pair) has an aluminum tweeter and woofer as well as a passive radiator to enhance bass performance. Its sloping baffle is said to position the drivers for proper time alignment. Bandwidth is given as 42 Hz to 22 kHz. The cabinet finish is walnut.



Definitive Technology's 38-inch-tall BP8 (above, \$798 a pair) is a two-way bipole speaker with front- and rear-radiating driver pairs to enhance spaciousness. Finish is black lacquer (shown) or light oak.

An alternative to the traditional speaker pair, Bose's three-piece Acoustimass-5 system (center, \$799) assigns bass duties to a hideaway module and uses two 6⅞ x 3⅞ x 4¾-inch "cube" speakers to reproduce middle and high frequencies.



Suitable for bookshelf use, Polk Audio's S6 (left, \$399 a pair) teams a tweeter, a 6½-inch woofer, and a passive radiator in a 21¼-inch-tall vinyl-clad cabinet. It's said to play down to 45 Hz.

microphone placement, and so on. There simply aren't any loudspeaker measurement standards with the near-universal acceptance of those for, say, CD players and receivers.

Even when all the questions are answered, you're still left with information that can only *suggest* how a particular speaker might sound. That's not to say you should avoid speaker reviews published in STEREO REVIEW and other magazines. On the contrary, a competent report will point out which measurements are significant and which are not, and it will give you an experienced listener's subjective impressions of what's "good" and "bad" about the sonic character of a particular speaker.

In the end, however, only you can answer the most important question: *Do you like the way it sounds?* And evaluating speakers is no simple task. Every listening session is influenced, often profoundly, by a number of factors, including the acoustic properties of the listening room, the type of music you ask the speaker to reproduce, the listening volume, and, of course, the condition of your hearing. Less obvious, but sometimes just as important, are the predispositions and outright prejudices that you can bring, unknowingly, to the task of evaluating speakers.

Try to be open-minded about what sort of loudspeaker is "best."

Try to be open-minded about what sort of loudspeaker is "best." For example, don't rule out vented speakers just because you have a leaning toward acoustic-suspension (sealed) designs. Likewise, if you or a trusted friend has owned excellent-sounding two-way speakers (with a woofer and a tweeter) in the past, don't dismiss

three-way designs (with a woofer, a midrange driver, and a tweeter). There's no rule that says one type of speaker always sounds better than another. And don't get too caught up in technical details like voice-coil construction, cone material, diffraction control, and so on. They're important concerns for the designer, to be sure, but the bottom line for you is how the speaker sounds.

### Perk Up Those Ears

By now it should be obvious—if you didn't already know—that you must be prepared to *listen* when you go speaker shopping. And the central problem in doing that is the disparity between store demo rooms and your home listening environment. In a perfect world, all speaker auditions would be done at home. In the real world, only a very few high-end dealers are willing to lend speakers out, and those who do usually offer this service only to established customers. So how do you cope?

The first step is to locate dealers in your area who have demo rooms similar in size and acoustic treatment to your listening space and who carry a decent selection of speakers in your price range. Unless you're on an extremely tight budget, the second part shouldn't be a problem. It also pays to seek out dealers who have a return policy, so in the event that you can't get the speakers you buy to sound "right" at home, you can at least exchange them for another pair.

Once you've found a couple of stores that you're comfortable with, the next step is to come up with a handful of CD's you know extremely well. Think of them as your personal test discs. If you have diverse listening tastes, be sure to select recordings that cover the primary bases. A speaker that sounds great with classical music, for example, may not quite cut it when it comes to rock, and vice versa. Also, if there is a particular musical passage that you feel is essential to your evaluation—perhaps you don't want to lose the delicious sonics for which you treasure the recording, or maybe the passage never sounded quite right on your present system—make a note of its "address" on a slip of paper stowed with the disc so that you can locate it quickly.

Pick up one of those small, soft fabric or vinyl CD carrying cases or wallets to hold your audition discs. I know it's an extra expense, but you

## CLOSE YOUR EYES... AND LISTEN

What, precisely, should you be listening for? Here's a quick checklist of qualities to pay attention to while you're auditioning speakers:

- **Ambience.** Do the speakers convey a sense of spaciousness that goes beyond their physical boundaries? Or does the music sound "boxy" or confined?
- **Stereo imaging.** Can you pinpoint the location of the vocalist (if there is one) and individual instruments? Or do the musical elements sound muddled, or seem to emanate from only one or two spots? A good recording of a live performance played over first-rate speakers should evoke a "you are there" feeling.
- **Tonal balance.** Does the music sound natural? Or are the highs shrill, the midrange nasal, the lows boomy? Pay particular attention to vocals and individual instruments—especially the ones you're most familiar with.
- **Spectral balance.** Does the music sound balanced—that is, does it have a natural mixture of high, middle, and low frequencies? Or are certain parts of the frequency range subdued or exaggerated? Common flaws include over-prominent highs, heavy bass, and weak midrange.
- **Clarity.** Does the music sound clear? Or do vocals and instrumentals sound "muddy" or distorted? Pay particular attention to musical clarity at high listening levels. Drums and other percussion instruments should sound crisp, not like mini explosions!
- **Dynamics.** Does the speaker render quiet musical passages with finesse and crescendos with authority? Or do soft passages lack detail and musical climaxes sound wimpy? —Bob Ankosko



B&W's 33-inch-tall DM 630i (\$1,100 a pair) shines when the grille is removed, exposing its metal tweeter and 7 $\frac{3}{4}$ -inch woofers. Frequency response is given as 53 Hz to 20 kHz  $\pm$ 2 dB.



Cerwin-Vega's AT-12 (\$690 a pair) is a three-way system with a 12-inch woofer and a 5-inch midrange driver. It's rated to handle 200 watts of power and has treble and midrange level controls. The 30-inch-tall cabinet is finished in woodgrain vinyl.



Boston Acoustics' HD8 bookshelf speaker (\$250 a pair) packs an 8-inch woofer and a soft-dome tweeter in an 18 $\frac{1}{4}$ -inch-tall cabinet. Frequency response is given as 50 Hz to 20 kHz  $\pm$ 3 dB, maximum power handling as 75 watts. Finish is woodgrain vinyl.

PSB's new Alpha Subsonic subwoofer (\$299) was conceived as "the perfect companion" for the popular Alpha two-way satellite (\$199 a pair), which doesn't play much below 90 Hz. The 15 $\frac{1}{2}$  x 20 x 17-inch bass module is said to extend response to 45 Hz ( $-3$  dB). The cabinets are finished in black woodgrain vinyl.



can slip the case into a pocket and leave the jewel boxes behind when you go on a listening jaunt.

If the dealer you visit sells a speaker you already own, by all means begin your trials with that model to "calibrate" the listening room. Does the sound differ significantly from what you're used to in your own room? If so, try to put your finger on the inconsistencies. Do you hear, for example, more or less bass? Duller or brighter highs? Once you have a pretty good idea of how the room is influencing the sound of the speakers, be sure to take these sonic differences into account while you're evaluating the performance of other speakers in that listening space.

### Don't Be Shy

While you're on the audition trail, it's also important to remain true to your own listening habits. Ask the salesperson to play the speakers that you're evaluating at least as loudly as you would at home, preferably using the same amplifier you plan to use. That's the only way to tell whether audible distortion will be a problem. If you must use another amplifier, try to choose one that is comparable in terms of design, overall quality, and rated power output. It doesn't have to match watt for watt, but it should at least be in the same ballpark. Also make sure that the levels of the speakers you're comparing are matched as closely as possible, and limit your comparison to two models at a time to avoid confusion. Some speakers are more efficient than others, meaning that they'll put out more acoustic energy (play louder) when fed a given input. Despite what anyone tells you, your ear will be naturally drawn to the louder speaker, making the comparison unfair.

Remember that a given pair of speakers will seem louder when they are played in a small, acoustically "live" (reverberant) room than they will when played at the same volume in a larger, acoustically "dead" room—and vice versa. Be sure to take these effects into account while conducting your evaluation.

Make notes as you go. It's very easy to hear what you expect to—or what the salesperson has told you to expect. Keeping a log of your impressions will help you avoid the trap of fixating on a single sonic consideration. Start each listening session as though it were the first, with no preconceptions, and compare the notes afterward.

When enthusiasm in one session is contradicted by bothersome qualities in another, go back for a third listen—or as many as it takes. The adage “Marry in haste, repent at leisure” applies here, too.

Little things can make a big difference in listening trials. So if you're seriously considering a speaker, ask to have it moved to a different location among the demo models. If the move makes a substantial difference in the sound quality, ask yourself which position is closer to where you would put it at home. And if you're test driving a three-piece satellite/subwoofer system, ask the salesperson to move the subwoofer to a position, relative to the satellites, that it's likely to occupy at home.

Also keep in mind that some speakers are designed to perform optimally for a specific placement. A model designed to go against a wall won't work as well if it's placed several feet out into the room. A small speaker intended for placement on a bookshelf or table will probably sound bass-heavy if it's plunked down on the floor. And so on. If at all possible, consult the owner's manual to see what the manufacturer has to say about placement of its speakers.

Any audio dealer worthy of the name will heed a manufacturer's placement recommendations and, at the same time, take steps to insure that the position of one demo model does not inhibit performance of another. That's not always easily managed, however, so bear in mind that some sonic shortcomings—say, muted treble or a ragged midrange—may be the byproduct of stuffing a speaker in between and slightly behind its neighbors. Or perhaps the vaunted “spaciousness” of a particular model is diluted by the lack of appropriate reflecting surfaces. Move 'em around.

In the final analysis, trust your instincts and, of course, your own ears. If one message is to take precedence over all others, let it be this: Don't permit yourself to be mesmerized by anything. If one model immediately appears to be a far better buy than anything else, walk away from it. You may wind up coming back to it in the end, but that kind of night-and-day experience just might be a warning signal that you have suffered a lapse in objectivity. Don't worry, it's usually temporary. □

Whether you're listening to a surround system that employs a simple left-minus-right ambience-synthesis circuit, a Dolby Pro Logic decoder for movie soundtracks, or a digital ambience processor, nothing is more distracting than sound that seems to bounce around the room. But that's precisely what happens when you combine speakers that have different tonal characteristics. Whether the sound source is a trombone or a tornado, a change in tone or pitch can make it appear to jump from one speaker to another or to some point in between.

Two-channel stereo systems avoid that sonic indignity by using two identical speakers. But when it comes to home theater setups, which typically have three full-range speakers up front and two surround speakers toward the rear, it's not always practical to use identical speakers throughout, nor is it absolutely necessary (or even desirable in some cases). The speakers should be tonally consistent with one another, though, especially across the front.

The safest approach is to go with a home theater speaker collection from a single company, in which the speakers may in fact be identical (except for a standalone subwoofer) or at least use mostly the same drivers.

Audiophiles often balk at this option, however; their favorite speakers may come from a company that doesn't offer home theater ensembles, or they may want to include beloved speakers in a larger setup rather than replacing them with the ones that come in a surround package.

If you find yourself in either situation, by all means use your favorite speakers (and the amplifier you have chosen for them) for the left and right front channels. In a home theater setting, these “anchor” channels will be called on to reproduce both background and foreground music as

well as many of the sounds and sound effects of on-screen drama. The trick then becomes one of finding a new center speaker that sounds similar to the main pair so that when the action moves across the screen (and its sonic counterpart through the center speaker) there are no distracting shifts in tone. While the center speaker doesn't have to extend as deep into the bass or have as great a power-handling capacity as the main pair, it must reproduce voices clearly and naturally.

The surround speakers, typically placed at the sides or toward the back of the room, normally don't need to reproduce deep bass or handle peak levels as high as those reproduced by the main speakers. Their primary job is simply to convey spaciousness, or ambience.

Once again, listening is the only true test. For speakers other than the main front pair, concentrate on how they reproduce vocals and midrange instruments like clarinet and saxophone. If a small speaker produces a harsh sound at your normal listening level but improves when you turn down the volume, it may still make a perfectly good surround speaker. —R.L.



KLH's Video Series includes two V-41 towers (\$700 a pair), the V-354 center speaker (foreground, \$250), the V-01 dipole surround (with angled sides, \$200), and the V-210 powered subwoofer (\$499).



# BASS-IC INSTINCT FOR AUDIO AND VIDEO

DEALER'S  
CHOICE

BY REBECCA DAY

Some folks believe that audio and “audio-for-video” sound systems are at cross purposes. A home theater system that’s capable of reproducing the *Terminator 2* soundtrack in all of its sonic glory won’t do justice to Mozart’s Clarinet Concerto, they claim—the imaging will suffer. Whether or not you subscribe to that theory, one thing’s for sure: Few people have the money or the space to put together a “dual” system with one set of speakers and components for music playback and another for movies. It’s just not practical.

With that real-world consideration in mind, we asked Noah Herschman, director of marketing for New England’s Tweeter Etc. chain, to recommend an A/V sound system that performs equally well in audio and video settings. Specifically, we asked him to gear his proposal toward a hypothetical customer willing to spend \$2,500 on a basic high-quality system to complement the 27-inch stereo TV and hi-fi VCR in his family room.

As far as Herschman is concerned, the difference between a good system and a great one comes down to one word—bass. “Whether you’re watching *Raiders of the Lost Ark* or listening to Beethoven’s Fifth, bass is the key to exciting sound,” he says. So his decision to start with a nice beefy subwoofer should come as no surprise. His choice was Mirage’s PS-12-180, a powered sub that packs a 180-watt amplifier, a two-way crossover with an adjustable low-pass filter, and a 12-inch woofer in a black-vinyl-clad enclosure that’s only about 18 inches square. In addition to bringing depth to any kind of music, the Mirage delivers “that elusive boom that makes you duck when a bomb explodes in *Platoon*,” Herschman says, noting that it plays down to 25 Hz.

For primary speakers, the Tweeter exec turned to a pair of two-way Klipsch KG-2.2 bookshelf speakers. Good dynamics and smooth, accurate highs, he says, make them suitable for both Hollywood soundtracks and music. Rated down to 50 Hz, the 19-inch-tall vented speaker uses two 6½-inch woofers and—in the Klipsch tradition—a horn tweeter. To keep the sound tonally matched across the front, which is especially important for video soundtracks, Herschman added the Klipsch KV-2 center-channel speaker to the lineup. The 20-inch-wide TV-top speaker, which has two 5¼-inch woofers and a horn tweeter similar to the one in the KG-2.2, is a natural for dialogue reproduction, he says. “Every whisper can be heard with the intensity the director originally intended.”

Besides matching each other sonically and in appearance—all sport a handsome wood-veneer finish—the Klipsch speakers boast higher-than-average efficiency, which makes them a good match for the modestly powered receiver Herschman has in mind. Klipsch rates the KG-2.2’s sensitivity at 93 dB and the KV-2’s at 92 dB.

Citing the importance of placement flexibility, Herschman chose a couple of Polk Audio’s distinctive wedge-shaped M<sup>3</sup> speakers for surround duty.

The 11¼-inch-tall two-ways, available in black or white, feature integral mounting brackets. “You can mount them upside down on the ceiling or angled toward the rear wall, set them on the floor so they fire up, or simply place them on a bookshelf or speaker stands,” he says. And despite their relatively small size, he adds, they can handle surround effects with authority.

At the core of Herschman’s system is Denon’s modestly priced AVR-800 receiver, featuring Dolby Pro Logic surround decoding and rated to deliver 60 watts each to the front speakers and 15 watts each to the surrounds. Given the receiver’s high-current amplifier design and the high efficiency of the primary speakers, he considers that plenty of power to fill a typical family room with reasonable sound levels.

Yamaha’s new CDC-745 five-disc carousel CD changer rounds out the system. Herschman chose that model for its technical prowess and convenience features: You can change four discs while one is playing and store reordered track sequences for up to 100 discs in the player’s memory. On the technical side, the CDC-745 uses Yamaha’s Pro-Bit digital-to-analog converter and S-bit Plus technology to squeeze as much fidelity as possible out of the 16-bit CD format.

Using the manufacturers’ suggested retail prices, the component tally squeaks past our budget by \$89. Not to worry, Herschman says. The package can actually be bought for less than \$2,300 when Tweeter’s discounts are factored in. In the end, though, he believes that the true selling point of this system is not its price but its broad appeal. “You don’t have to enjoy any one type of music or movie to appreciate it.” But you’d better be prepared for a jolt when that subwoofer kicks in during *Terminator 2*. □

## \$2,500 SYSTEM

Tweeter Etc., Boston, Massachusetts

- Denon AVR-800 receiver (\$500)
- Yamaha CDC-745 CD changer (\$430)
- Klipsch KG-2.2 speakers (\$450 a pair)
- Klipsch KV-2 center-channel speaker (\$249)
- Polk M<sup>3</sup> speakers (\$240 a pair)
- Mirage PS-12-180 powered subwoofer (\$750)

A GUIDE TO

# AUDIO/VIDEO RECEIVERS

**Today's A/V receivers  
will do just about anything you  
want—except pop the corn.**

**T**he audio/video receiver combines three essential home theater components in one remote-controllable box—a Dolby Pro Logic surround-sound decoder, a multichannel power amplifier, and a preamp with switching facilities for several audio and A/V components. Of course, you also get an AM/FM tuner with more presets than most of us know what to do with and perhaps even an ambience processor. Add a VCR or laserdisc player, the requisite speakers, and some popcorn, and you're off to the movies—at home.

When you consider the A/V receiver's extraordinary utility, it's no wonder the category has ballooned to the point where there are now dozens of fully featured models from which to choose. If you can't find one that meets your needs and comple-

ments your tastes, you're probably not looking very hard. But you are going to have to do a little homework to get a handle on the staggering array of possibilities.

The first quiz is easy: What do you want? Do you want top surround-sound performance for music as well as movies? Or do you prefer standard stereo playback for everything but video soundtracks? Are extra features like synchronized CD-to-tape-recording or an on-board equalizer important to you? Or do you prefer a "plain vanilla" model that sticks to the basics? Does state-of-the-art FM sound matter to you? Or is your radio listening strictly a casual affair? These questions and more should pass through your mind before you visit the first dealer on your hit list. The following areas of interest are arranged as I value things—

PHOTO BY JEFFREY KREIN

**BY DANIEL KUMIN**



Control options are displayed on a TV screen by Sony's STR-G1ES VisionTouch A/V receiver (\$1,700), and selected with an egg-shaped one-button remote control. (The TV is Panasonic's 31-inch CT-31XF50.)





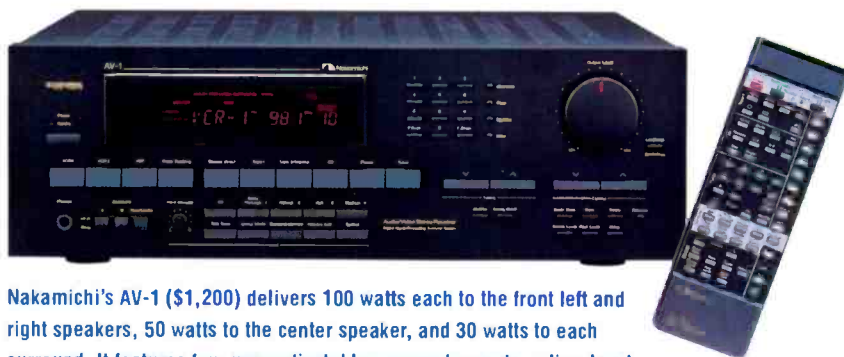
Carver's HR-895 (\$1,250) delivers 110 watts each to the main front speakers, 75 watts to the center, and 35 watts to each surround. It has S-video inputs, a subwoofer output, and five pre-out/main-in loops and comes with two remote controls and an infrared receiver for use in a second room.



Sherwood's RV-5030R (\$370) has five audio and three video inputs, including a set on the front panel, and front-channel pre-out/main-in loops. Power output is 65 watts for each front speaker and 20 watts for each surround, or 105 watts per channel in two-channel mode.



Harman Kardon's AVR30 (\$1,149) features thirty-six user-adjustable sound-field settings, on-screen graphics, and two remote controls. Power output is 50 watts per speaker across the front plus 20 watts to each surround, or 60 watts each in two-channel mode.



Nakamichi's AV-1 (\$1,200) delivers 100 watts each to the front left and right speakers, 50 watts to the center speaker, and 30 watts to each surround. It features four user-adjustable surround presets, a line-level mono output, five pre-out/main-in loops, and a learning remote control.

but I encourage you to re-order them to follow your own priorities.

## Theater in the Round

Surround sound with multichannel amplification is what separates A/V receivers from the garden variety. Today, virtually all new A/V models include Dolby Pro Logic decoding, an enhancement of the original Dolby Surround scheme that adds a center channel (for a speaker that usually winds up on top of or underneath the TV) and five speaker outputs: left, center, right, and left and right surround—though the last two carry identical monaural signals.

**T**here is little if any price advantage in purchasing an A/V receiver without Pro Logic—you may even have trouble finding one. And Pro Logic is a worthwhile improvement since it encourages you to add a center-channel speaker, one of the keys to good home theater sound. Though any Pro Logic decoder carrying the Dolby Labs seal of approval will deliver fine performance, there are differences. To check them out, disconnect the center speaker and listen for dialogue "leakage" to the front left and right channels and the surrounds. (Make sure the receiver is in the Pro Logic mode!) Ideally, there should be almost none—provided, of course, that the dialogue is *supposed* to be centered on the TV screen. Also listen for decoder and amplifier noise (hiss), especially from the surround speakers, during very quiet scenes played at movie-theater levels. A noisy surround channel may seem petty now, but it will gnaw at you a few months down the road.

Pro Logic extras you should expect include a Dolby 3 Stereo mode, for systems that have a center speaker but no surround speakers (this mode mixes the surround signals into the front left and right speakers), and a choice of center-channel modes: narrow for systems with a limited-range center speaker, wide for those with a full-range center speaker, and phantom for those with *no* center speaker. Another useful feature is automatic input balance, which corrects left/right imbalances in some soundtracks (more common than you might guess).

Some A/V receivers include "enhanced" movie surround modes designed to improve on Pro Logic's performance. Yamaha's Cinema-DSP is

among the best known. Film purists may eschew such enhanced modes in favor of standard Pro Logic (for which movie soundtracks are usually mixed), but many people like the feeling of spaciousness most of them provide. They're certainly worth a demo, at least, to help you make a decision.

The latest wrinkle in A/V receivers is Home THX certification, which until recently was available only for stand-alone surround processors, amplifiers, and speakers. So far two THX-certified receivers have been announced: The \$2,000 Onkyo TX-SV919THX should be in stores by now, and the Technics SA-TX1000 is slated to go on sale this fall for about \$1,200. Both incorporate Lucasfilm's proprietary Home THX surround setting, which embellishes normal Pro Logic decoding with custom equalization and "decorrelation," a process that creates two quasi-distinct channels from the mono surround channel to improve the enveloping effect. The THX label also insures that a receiver has enough clean power for real-world listening conditions.

Many A/V receivers also bring several music surround modes to the party. Designed to simulate the ambience of different-sized spaces, these modes are typically labeled Concert Hall, Jazz Club, Cathedral, and the like. Some models go a step further and let you adjust parameters like reverb time and depth to modify the factory-set sound fields or invent your own. If the idea of music surround sound appeals to you, be sure to run through the various modes and listen very carefully—surround effects vary greatly from one type of music to another. Otherwise, focus on the receiver's ability to provide convincing surround sound for movies.

Along similar lines, many A/V receivers also offer a surround mode for mono program sources, such as old films and the many cable stations that (still!) don't distribute in stereo. I favor settings that send a full mono signal to the center speaker and a delayed quasi-stereo signal to the surround speakers and then permit adjustments to the left/right "stereo" spread. But there are lots of other mono surround schemes, so listen carefully.

### The Powers That Be

Power is next on the agenda. How much do you need? Generally speaking, the more the merrier—especially if you have a large listening room or a

**Virtually all  
new A/V  
receivers  
include Dolby  
Pro Logic  
decoding.**

craving for theater-like sonic impact. The most important power criterion for an A/V receiver is that it deliver *equal* power across the front three channels in Pro Logic operation (and any other mode that uses three front channels). A balance of front-channel power is necessary to reproduce movie soundtracks accurately—especially dialogue and mid-screen sound effects. Many receivers deliver somewhat higher power in two-channel stereo mode, which is fine.

Surround-channel power is another matter. The typical A/V receiver delivers about a third as much power to the surround speakers as it does to the front speakers, which is usually perfectly adequate given the largely ambience-providing nature of the surround channel in most movie soundtracks. But if you have a large room or surround speakers with unusually low sensitivity, look for receivers that deliver more power to the surround channels (some models deliver close to half as much power to the surrounds as to the mains).

In terms of amplifier performance and stability, most A/V receivers should be capable of driving low-impedance speakers (4-ohm nominal). Check the literature to see if significantly higher power output is specified into 4 ohms compared to the norm of 8 ohms—a sign that a robust, high-current output stage is employed. Some manufacturers even specify stability into 2-ohm loads on certain models.

So how much wattage can you ex-

pect in exchange for your hard-earned dollars? A/V receivers that deliver about 50 watts to the three front speakers and 15 or 20 watts to each surround are par for the course in the \$400 to \$600 price range—and they will serve most systems well. Various power configurations are available between this level and the \$1,000-plus flagship range, where the typical A/V receiver pumps out 110 watts to the front speakers and 30 or 40 watts to the surrounds. But keep in mind that *doubling* power is the only way to gain a meaningful increase in loudness (3 dB), so don't let 10 or 20 watts of extra power be the sole basis for an upgrade—look at the big picture.

### Hands-On Command

Today's A/V receivers are complex beasts, to be sure, so it pays to include thorough hands-on evaluation in your shopping routine. Put the unit through its paces, and be critical—that's the only way to get a feel for how pleasant or maddening it will be to live with a particular model. The main question is: Are the controls and visual displays intuitive and easy to use and understand? Or do you have to consult the owner's manual to adjust the treble or switch operating modes? The same goes for the remote control, which deserves even closer scrutiny since it will probably be your primary interface with the receiver.

**S**peaking of remotes, the wireless controllers supplied with many A/V receivers are preprogrammed to control other same-brand components and can often be programmed to operate different-brand components as well. Some have a resident memory containing control codes for dozens of TV's, VCR's, and the like; setup is a matter of selecting component codes from a list and following a simple procedure. Other remotes have a "learning" mode that imports control codes from other components; typically you hold the remote of the component you want to control nose-to-nose with the receiver's remote and push a button or two. Some receivers even come with two remotes—one with only basic controls and one that's programmable.

A growing number of topflight A/V receivers feature a simple video interface that displays characters and basic graphics on the TV screen as a visual guide to system operation and status—

## SHOPPING BY THE NUMBERS

It's easy to get sidetracked and lose perspective when you're shopping for an A/V receiver because there are so many features and options to consider. To help ease you through the process, I've prepared a checklist of the features I would insist on in a basic A/V receiver as well as additional or modified features to look for in two higher (suggested retail) price ranges.

### \$375 to \$600

- 35 to 60 watts each for the three front speakers and 15 to 20 watts for two surrounds
- Dolby Pro Logic decoding
- One or two music surround modes
- Three sets of A/V inputs and outputs and one audio-only set
- A preprogrammed system remote control that can also be programmed to operate other-brand components

### \$600 to \$1,000

- 50 to 90 watts for each front speaker and 20 to 35 watts for the surrounds
- Amplifier section also rated for 4-ohm loads
- Automatic input balancing for Dolby Pro Logic operation
- A good mono-enhance mode and several music surround modes
- Pre-in/main-out jacks and ample A/V and audio-only inputs and outputs
- S-video connections for at least one A/V source and the output to the video monitor
- On-screen displays for setup and operation
- Excellent FM performance

### \$1,000 to \$2,500

- 80 to 150 watts each for the front speakers and 30 to 50 watts for the surrounds
- Two mono-enhance modes and at least two user-adjustable music surround modes
- Lots of A/V inputs and outputs, including one front-panel set (handy for camcorder use)
- S-video connections for at least three A/V sources and the video-monitor output
- Possibly a graphics-based on-screen interface
- A powerful full-system remote with "macro" command capability
- Tuner performance equal to that of separate tuners in the \$400 to \$600 range
- Possibly a multisource, multiroom option for secondary speaker outputs, including infrared (IR) inputs for remote-room sensors

—D.K

in much the same way that many new TV's do. When you adjust the volume, for example, the word "volume" might appear on the screen along with a series of bars that extend upward when the sound level is increased and go down when it's lowered. Taking the concept to the next level, Pioneer and Sony now offer flagship A/V receivers with menu-driven interfaces that display Macintosh/Windows-like computer graphics on-screen. Controls ap-

pear as graphic icons that can be operated using the remote control. Sony has even gone so far with its top receiver as to replace the conventional remote control with a one-button mouse-like controller that you use to click your way through the multitude of operating modes.

### A/V Ins and Outs

By definition, an A/V receiver includes integrated inputs, outputs, and

switching for at least a few video components. Typical facilities include a couple of input-only A/V ports, each consisting of a pair of RCA-type audio inputs and a single video input jack for such sources as a laserdisc player, an interactive/game system, or a satellite receiver. There should also be A/V input/output sets for one or more VCR's as well as conventional audio-only connections for a CD player, a tape deck, and so on. Most A/V receivers also have a line-level subwoofer or mono output, which may come in handy if you think you might want to add a powered subwoofer to your system some day. If you plan to use a turntable, be sure that the receivers you're canvassing have phono inputs—this feature is gradually falling by the wayside.

S-video jacks are becoming fairly common on A/V receivers these days. They parallel the standard RCA-type composite-video inputs and outputs and maintain separate electrical paths for the color (chroma) and brightness (luminance) parts of a video signal to keep it as pure as possible. Of course, to take advantage of this subtle picture-quality refinement, you must have a source component with S-video outputs—like an S-VHS or Hi8 VCR or camcorder—and a TV with S-video inputs. S-video connections from a laserdisc player may give subtle improvements, too, but only if the player's video comb filter is superior to the one built into your TV.

While you're thinking about the receiver's back panel, get out your crystal ball and ponder your future for a moment. If there's a possibility that you might want to upgrade power output some day, make sure the unit has pre-out/main-in audio jacks. They'll enable you to supplement the resident amplifier with a more powerful out-board model.

Beyond the sheer number of inputs and outputs that a particular model offers, it's also important to pay close attention to how it handles source selection and switching—there are many variations on this theme. For example, some receivers let you route audio and video signals independently (important if you record "simulcast" concerts). Others let you dub a hi-fi videotape from VCR 1 to VCR 2, or a CD to cassette, while viewing or listening to another program. Are the switching options flexible enough to suit your needs? How about operation? It should be simple and swift.

## Hi-Fi—Remember That?

Finally, we come to the question of basic audio performance and radio reception. (We're assuming, of course, that your receiver won't spend all of its time locked in Pro Logic mode.) Obviously, an A/V receiver should be held to the same standards as any other audio component for distortion, noise, frequency response, and so on. The type and effectiveness of basic preamp controls—volume, tone, balance, etc.—vary quite a bit from model to model, as do the usefulness and quality of such extras as bass equalization, a "cinema" EQ mode, loudness compensation, and more. Don't forget to examine these features carefully and critically—often they'll turn out to be far more valuable (or irritating) than a heavily promoted but seldom-used surround-sound feature.

Comparing tuners is always a tricky proposition, because the only fair comparison is one in which all candidates are connected to the same "house" antenna system. Even then, because of differences in topography, the antenna used, etc., in-store differences aren't necessarily a reliable indicator as to how the radio will perform at your house. (Tip: \$100 spent on an outdoor FM antenna, or just \$50 spent on elevating an existing one 25 feet, will almost always produce better reception than an extra \$300 spent on a receiver that has a "superior" tuner.)

To get an idea of a tuner's FM performance—unfortunately, you can pretty much write AM off—find a good strong National Public Radio station on the left end of the dial and listen for clarity, musical balance, and hiss. Then try a few fringe college stations to gauge weak-signal performance. Finally, find a few strong pop stations crowded together on alternate channels (say, 100.7, 101.1, and 101.5) and listen for interference.

**T**here are, of course, many other areas worthy of investigation while you're hot on the A/V receiver trail. Topping the list are some obvious criteria: quality of construction and finish, appearance, and warranty, to name but three. They are every bit as important as any technical consideration, so don't just brush them aside. After all you've been through, you deserve a component that is well made, that you like the looks of, and that will provide years of trouble-free audio-video enjoyment. □



Yamaha's flagship RX-V1070 (\$1,349) features three Cinema modes, including enhanced Dolby Pro Logic, four music-surround settings, on-screen graphics, and a learning remote control. Power output is 110 watts per channel across the front and 30 watts to each surround speaker.



Pioneer's VSX-37 (\$2,600) uses a computer-like on-screen interface to guide you through its wealth of A/V processing options, including adjustable surround and EQ parameters. Power output is 70 watts per channel across the front and 45 watts for each surround speaker.



JVC's RX-509VTN (\$400) features two video inputs, a Hall surround mode, and a remote that also controls other JVC components. Power output is 80 watts each to the main front speakers and 20 watts each to the center and surround speakers.



Kenwood's KR-V8050 (\$549) has two DSP Logic theater modes and four music modes. Power output is 75 watts per channel across the front and 20 watts to the surround speakers, or 120 watts each in two-channel mode.



# SURROUND SOUND FOR MUSIC

**BY E. BRAD MEYER**

# Y

ou've brought your new Dolby Pro Logic A/V receiver home and set it up with your hi-fi VCR or laserdisc player, and you like the impact and excitement of movies in surround sound. But after a while you notice the extra buttons on the remote: "Hall," one says, and "Club" is on another, and perhaps there's a third labeled "Stadium." Pushing them changes the sound, but what exactly is going on, and why are those buttons there in the first place?

Nowadays, almost all A/V receivers and amplifiers include a Dolby Pro Logic decoder and power for the five speakers necessary to reproduce a Dolby Surround movie soundtrack properly. Dolby Surround encodes four channels of sound—three front channels played through left, center, and right speakers, plus a surround channel normally played through a pair of speakers to the sides or rear of the listening area—into the two used for conventional stereo. Dolby Pro Logic recovers the center and surround channels, as best it can, from the left and right channels for full surround sound. If you play an ordinary, unencoded stereo recording through a Dolby Pro Logic decoder, you will almost always get something from the center and surround speakers, but the overall effect will not necessarily resemble anything the recording's producers might have intended (see "Music and Pro Logic" on the next page). It may sound good, or it may not.

The purpose of those extra buttons on your remote is to provide surround processing that is optimized for regular two-channel music CD's. Even a theoretically perfect two-channel system provides only a window into the space where the musicians actually played. But sophisticated ambience-enhancement surround processing can use the extra speakers installed for home theater to pull you through that window into a realistic and involving virtual performance space. Digital signal processing (DSP), which is used in some surround decoders, turns out to be especially well suited to that task.

## The Sound of Live Music

In order to mimic acoustic spaces, the designer of a surround processor has to know what they do to the sound. The listener in a typical performance space, such as a concert hall, hears the sound coming directly from the performers first, followed by reflections from the stage enclosure and the floor and then, many milliseconds later, by sound returning from the side walls, the ceiling, and the rear wall. The side reflections, especially, are important to giving the sound a sense of spaciousness. After these initial, discrete reflections, a good hall also generates additional reflections, too many to be individually discernible, that blend into a smooth reverberant "tail."

In the early 1970's, two Boston-area research firms built big, multichannel systems in an attempt to recreate the sound of a classical concert hall. The multichannel simulator had tape delays and equalization calculated to match the characteristics of reflections in actual halls and a separate amplifier and loudspeaker for each direction. The listener sat in the middle of a hemispherical array of ten or twelve speakers suspended from the ceiling on strings.

The sound of those systems was quite convincing, but the

hardware obviously had to be drastically reduced for home use. The key function was to delay the sound by varying amounts and then deliver it to the listener from all around, not just from the front. Signal delays are the main ingredient in the simulation of acoustic spaces. How plausibly those spaces are recreated depends on how many delays the hardware can generate and how skillfully they are deployed, but it takes at least four channels to do the job well.

## Levels of the Game

Pro Logic decoders at all price levels achieve fairly similar results, with minor differences, until you reach the most expensive gear with Home THX or other enhancement options. But the music programs in these audio computers vary widely in their ability to create plausible acoustical spaces, and the differences are both obvious and pretty well correlated with price.

First of all, you can always listen to music through the Pro Logic circuit, though, as we've already noted, with uncertain results. But it's easy to get one fairly good music mode out of the Pro Logic chip—and many manufacturers do—by simply switching off the center channel, the Pro Logic "steering" circuit (which directs specific sounds to the center and surround speakers), and the Dolby B chip in the surround channel. The difference signal between the channels (left minus right, or  $L - R$ ) still goes to the surround speakers, with the usual 15- to 30-millisecond delay. Pro Logic uses this delay to insure that any dialogue leaking into the surround channel is masked by earlier sound from the front. In this music mode, however, the delay adds spaciousness to the sound. Since much of the reverberation in both classical and rock recordings is uncorrelated in phase, a high proportion of it ends up in the surrounds, producing a mild but believable hall effect.

At the next level of music surround we find longer delay to the side or rear speakers and maybe a little recirculation, meaning that the delayed signals are fed back to simulate complex multiple reflections. A typical A/V receiver of this design might have a Club setting, with a total delay to the surround speakers of 40 to 60 milliseconds, a Hall setting with 80- to 140-millisecond delays, and an echoey Stadium setting with delays up to 300 milliseconds or more, useless for anything but in-your-face in-store demos.

The best receivers of this grade use digital delays, which have the big advantage that longer delays and recirculation involve no sacrifice in sound quality. The results for the Club and Hall settings can be quite satisfying with good surround speakers carefully set up. (As with film sound, the harder it is for you to hear where the surround speakers are, the better the effect will be.)

At the top of the heap, in both quality and price, are high-end separate surround-sound processors. The best of these come from companies with long experience of making all-

**A home theater system can be good for more than just movies.**

digital reverberation devices for audio professionals—companies like Lexicon, Yamaha, JVC, and Sony. Their enhancement circuits are all digital, with not just a few additional delays but tens or hundreds, forming a smooth, dense field of simulated reflections that can generate really convincing spatial illusions. With these devices you can create several kinds of spaces (some modeled after actual halls and clubs), modify the preprogrammed modes in interesting ways to create new spaces of your own, and store your creations in the processor for instant recall. (The exception to this pattern is Fosgate, whose quite different approach has been to make inventive use of the steering circuits designed for Pro Logic to place individual sources in the left, right, and surround loudspeakers.)

For maximum effect from these high-end processors you will need not just a single two-speaker surround channel but two or three sets of additional stereo speakers at various locations. This all-out approach demands lots of money and space, but at its best it can rival the multichannel simulators that started this whole trend, producing intriguing simulations of everything from an intimate club to a giant stone cathedral.

### Shopping for Music Surround

How do you evaluate the music-enhancement modes in an audio/video receiver or processor? Before you leave home, check recent issues of *STEREO REVIEW*, which have included detailed evaluations of the surround programs in reviewed A/V components. Because store demonstration facilities for surround sound are often poor (or nonexistent), these reviews can be extremely helpful guides.

In the store, try to listen to the equipment in a surround-sound setup. Audition each music-enhancement program using a CD player as the source, and use the remote to pause the player. Whatever you hear after the player goes into pause is the sound of the enhancement. (Even more powerful as a diagnostic tool is a test CD with a single pulse repeated every second or two.) With the simplest circuits you'll hear a single rapid repeat; the middle-level processors will give you a slightly longer and distinctly spacy sound (a pulse input will be repeated ten to twenty times in rapid succes-

sion); and the high-end units will create a realistic and smooth decay of sound whose character depends on the selected program (a pulse will echo and decay as though you had clapped your hands in a room).

Like the change from mono to stereo, your first experience with music surround sound can be spectacular even with crude circuitry and rudimentary playback equipment, but the best long-term results come when a high-

quality system is adjusted for more subtle and realistic effects. The short version of this story is that the extra speakers in the best music surround systems are not obvious until they're turned off—and then you'll want to turn them back on immediately. □

*E. Brad Meyer, an audio consultant and recording engineer/producer, is president of the Boston Audio Society.*

## MUSIC AND PRO LOGIC

Most homes with theater systems have cable, too, and that means MTV, VH-1, and other music channels. What happens when you switch to cable with the Pro Logic decoder on (as we increasingly do, from simple laziness if nothing else)? What happens when the decoder encounters a track mixed for two-channel reproduction?

It depends on the mixing engineer and on the type of music. In a classical-music production, the center speaker will reproduce instruments in the center of the stage. That stabilizes the stereo image in a helpful way, enabling off-center listeners to hear the stereo soundstage more accurately. But if the center speaker is not the equal of the left and right, there will be a mismatch in timbre between the center and the sides. Also, the slight high-frequency rolloff in the front channels of some Pro Logic decoders can make them sound noticeably less clear and transparent. Most classical recordings contain enough out-of-phase ambience information that the surrounds tend to reproduce more hall sound than the fronts, creating a plausible kind of spaciousness.

Pop and rock producers almost always mix the main vocal equally in both channels, so a Pro Logic decoder will "steer" it to the center loudspeaker. As with classical music, that's okay if your center speaker is good enough to carry the burden of the vocals, but some, designed primarily for speech, are not up to the job. Pop recordings typically have artificial reverberation added, usually generated in stereo, so it, along with any other uncentered element in the mix, will be audible to some extent in the surrounds. Some producers deliberately introduce out-of-phase elements in a mix to

create unusual imaging effects for listeners seated exactly between the speakers, with sources apparently located to the sides or even slightly to the rear of the listener. A Pro Logic decoder will interpret those effects as surround signals.

While working on this article I listened to a variety of music using both Pro Logic decoding and various music-enhancement programs. The Pro Logic decoding was usually fairly interesting and sometimes more involving than the straight two-channel sound. The combination of the surround speakers and a slight high-frequency rolloff in the decoder I used made most music sound both larger and more distant, which was sometimes desirable and sometimes not. Special imaging effects produced by phase manipulation were audible from the surrounds to all listeners, not just to the one in the sweet spot, but for that centered listener the placement of the phantom sources was much less accurate than in a two-channel presentation.

As you might suspect, the very best two-channel recordings were most effective sonically and musically without Pro Logic, listened to as the producers intended, through just two loudspeakers of top quality.

One final hint came out of this research: If you like to listen to MTV through your home theater system, and if your cable box has its own volume control, turn the cable-box volume all the way up and regulate the sound level at your TV or receiver. Turning down the cable-box level control cuts the input to the TV's MTS stereo decoder, collapsing the sound to mono. —E.B.M.



# YOU STILL DON'T GET IT?



ILLUSTRATION BY ANTHONY RUSSO

**F**or most people, audio is mainly about listening to music. But there is an undeniable appeal to the equipment and the technology behind it, and many of us nonengineers delight in any chance we get to look inside the boxes and get some sort of handle on what's going on in there.

Sometimes the handle's a bit wobbly, however. Audio involves some very sophisticated electronic and digital concepts, mixed in with that old devil psychoacoustics, so it's hardly surprising that some of the things that go on inside the boxes are difficult to grasp. On the following pages are half a dozen of them that seem to cause confusion.

**Making sense of six slippery audio concepts**

**BY IAN G. MASTERS**

## I'LL BE WITH YOU IN A MILLISECOND

### ARRIVAL TIME AND SURROUND DELAY

Every Dolby Pro Logic decoder contains circuitry that delays the surround-channel information by a small amount, typically 20 milliseconds (ms) but usually variable from 15 to 30 ms to accommodate different rooms. It may be natural to suppose that this delay is a sort of "reverb," like that added to old pop records to create a spurious sense of depth.

Nope. It's a clever way to overcome one of the most sophisticated processes in human hearing. We detect the direction from which a sound is coming by differences in level and arrival time. Localization based on level differences is fairly imprecise, but it does allow some spatial adjustment by way of an amplifier's balance control. Our ears are far more sensitive to differences in arrival time, however. If a sound reaches one ear a tiny fraction of a second before it gets to the other, it will be perceived as coming from that direction even if its level is substantially less than that of the later sound.

A Dolby Pro Logic decoder extracts a mono surround signal that has been mixed in with the main audio and, ideally, feeds that, and only that, to the surround speakers. Nothing's perfect, however, and often significant amounts of front-channel information leak into the surround channel. That might not matter except that the surround speakers are often closer to the listening area than the front speakers, especially if you follow Dolby's recommendation and place them on the sides rather than at the rear of the room. To prevent localizing some of the main-channel sound at the surround speakers, enough delay is added to the surround channel that, whatever their relative levels, the front signals will always arrive first. Dialogue will remain in front. A delay of 20 milliseconds is roughly the equivalent of placing the surround speakers 20 feet farther away from your chair.

## PUTTING SCHWARZENEGGER IN HIS PLACE

### SOUND LOCALIZATION AND THE CENTER CHANNEL

Just how sensitive we are to such time-related matters is evident up front as well. The original surround decoders for home use simply relied on ordinary

The decibel is  
notoriously  
hard to  
comprehend.

stereo imaging for putting the dialogue in the middle of the screen (and the "phantom" mode does that today in Dolby Pro Logic decoders). That's fine for whoever happens to be sitting on the line that is equidistant from both speakers, but most of us choose to watch side-by-side with friends and family, at least sometimes. If you are sitting off the center line, the path lengths from the front speakers are different, so the sound from the closer one arrives first and you localize the sound there. Simply adding a speaker in the middle helps a little, but not much. Dolby Pro Logic extracts equal-level in-phase material (dialogue and other mid-screen sounds), deletes it from the left and right front speakers, and directs it to the center. The result is that the dialogue seems to come from the center no matter where you are sitting because it really is being produced by its own speaker—there's no imaging about it.

## SOFA, SO GOOD

### BASS LOCALIZATION AND SUBWOOFER PLACEMENT

Elsewhere on the psychoacoustic front, some sounds are very difficult to localize, and more and more audio systems are taking advantage of that. Most of the localization clues we detect are acoustic events: changes in frequency or level, percussive noises, and so forth. Steady-state sounds, such as prolonged tones, are very hard to pinpoint even at fairly high frequencies because the time cues are missing. The lower the frequency, the more pronounced the effect because the wavelengths of the sounds are very

long compared to the distance between our ears (a 50-Hz signal is about 20 feet from peak to peak, compared to the 7 inches or so between our ears). As a result, the lower couple of octaves of the audio spectrum (below about 100 Hz) give almost no directional clues.

Thus, there is no real need for the speaker that produces the deep bass to be anywhere near the rest of the speakers. As long as it has a relatively low crossover point and is not placed where it will interact unfavorably with the room surfaces, a low-frequency speaker can go anywhere that doesn't result in poor tonal balances—behind the sofa, at the far end of the room, under the coffee table. And, although in some systems there are good reasons to have multiple bass speakers (often called "subwoofers," often erroneously), there are many fine-sounding home theater installations with five tiny satellite speakers for imaging and directionality, and one lone woofer.

## PLUS OR MINUS THE DECIBEL

If there's one thing calculated to frown the brow, it's the decibel. It's everywhere in audio but notoriously hard to comprehend. In the first place, the decibel (dB) per se is not a unit like a watt or an inch, but a way to express the ratio between two signal levels that could otherwise be measured in such units as volts or watts.

Two signals that differ in level by, say, 3 dB bear the same ratio to each other whether they are loud or soft. Positive dB numbers simply indicate that one signal is larger than the reference level, negative dB numbers indicate it's smaller, and 0 dB indicates no change. Which of the two signals is taken as the reference can be arbitrary, conventional, or tightly specified by international standards.

Suppose you are talking about an amplifier driving a speaker. Changing the sound level +3 dB using the volume control would mean doubling the number of watts fed to the speaker, and changing it by -3 dB would mean halving the wattage. That is an example of an arbitrary decibel reference. Such wattage ratios could be stated in the form "2:1" or "1:2" respectively, but the decibel's logarithmic notation has several important advantages.

Most significant is that over a wide range of intensity decibels correlate

very well with perceived sound level. For example, repeatedly increasing the level of a signal by equal decibel steps (say, 3 dB at a time) produces—to the ear—equally spaced increases in loudness, even though the wattage delivered to the speakers doubles with each step. Also, 1 dB is a “just noticeable difference” in the level of a pure tone.

Another advantage, this one directly related to the operation of audio equipment, is that cumulative gains or losses in level can simply be added or subtracted. If you connect two amplifiers in series, each having a frequency response that is down by 3 dB at 10 kHz compared to its output at 1 kHz, the response of the combination will be -6 dB at 10 kHz. The response of five such amplifiers in series would be -15 dB at 10 kHz (referred to the 1-kHz level). Note that you don't have to worry about the actual signal levels or their numerical ratios to figure this out—or to reach the conclusion that all the amplifiers have pretty crummy frequency responses.

A third advantage of decibel notation is that it “compresses” into an easy-to-manage 120-dB scale the approximately 1:1,000,000,000,000 intensity range of human hearing. And within that range you can discuss loudness by adding and subtracting decibels instead of multiplying or dividing ratios.

What might confuse things unnecessarily is that some uses of the decibel *do* result in actual units. That occurs when the reference level for the decibel reading has been standardized. The “dBf” found in tuner measurements, the “dB SPL” (decibels of sound-pressure level) of a loudspeaker sensitivity rating, the “dBA” (A-weighted sound-pressure level) in environmental noise tests, and the “dBFS” (decibels relative to full scale) of digital audio are examples of such standard units, though they are still logarithmic ratios like other uses of the decibel.

## ROUNDING THE CORNERS

### OVERSAMPLING AND DIGITAL RECORDING

Because digital recording encodes a series of instantaneous voltages measured at regular time intervals rather than storing the continuous variations of a soundwave or an analog signal, the first step in playback is the production of a sort of “step” waveform. For each 16-bit word, the digital-to-analog



converter (DAC) produces the appropriate output voltage and continues to produce it until the next word comes along. The result is a sort of up-and-down staircase pattern that has the same overall shape as the original analog signal but is made up of straight lines and right angles—square waves rather than smooth sinusoidal curves.

Square waves can be thought of as sine waves with massive amounts of spurious harmonics. Like all harmonics, these are higher in frequency than the wanted signal. The first of them (quirkily called the “second harmonic”) is one octave above the fundamental—that is, double its frequency. Therefore, if a “squared” signal is fed into a filter that lets the audio band through but chops off everything above it, the result is a replica of the original “rounded” signal.

Trouble is, one octave is a very small space in which to roll off the unwanted harmonics adequately, and analog filters that can do it while maintaining flat response at the top of the audio band tend to be expensive. Also, such a sharp filter so close to the audio band tends to create phase shifts in the upper frequencies. The shifts are small enough in magnitude to be inaudible, but since digital information is relatively easy to manipulate, it's no big deal to interpolate intermediate voltages between the initial steps of the DAC's output, and even further steps between those—two-times and four-times “oversampling,” respectively. That effectively doubles or quadruples the sampling frequency, enabling a more gradual analog filter to be used for the final rounding, and the filter can be placed farther away from the

audio signal. The amount of oversampling is theoretically unlimited, and eight-times-oversampling is common.

The advent of 1-bit conversion has given a new role to oversampling. The 1-bit technique has inherently high noise levels, but the noise is spread evenly over the spectrum—not just the audio portion of it, but up to half the sampling frequency. The higher the oversampling rate, then, the less the noise in the audio band, so 1-bit converters have oversampling rates many times higher than those of conventional units.

## GETTING STRAIGHT

### TAPE BIAS AND ANALOG RECORDING

Magnetic recording has been with us for a century, amazingly enough, but for its first four decades it barely worked. Only when a high-frequency signal called AC bias was added to the normal audio did the system produce good sound.

Any audio device must be “linear” at all operating levels: That is, the relationship of one part of the signal to another must be the same coming out as it was going in. Any differences are, by definition, distortion. Most components, including tape recorders, have an upper limit beyond which distortion becomes unacceptable, but low-level signals are usually easy to handle. With the early magnetic recording devices, however, there was reasonable linearity at middling levels, but as the level dropped toward zero linearity fell apart. Since most audio signals spend most of their time near the bottom of their range, there were gross amounts of distortion in early tape recordings.

Enter AC bias, a tone with a frequency much higher than the audio band—typically 100 kHz or more—that's added to the audio being fed to the recording head. The bias has the effect of raising the overall level into the linear range; the recorder doesn't know that the bias isn't music. Because of its high frequency, we would not hear the bias in playback even if the tape heads could reproduce it.

The devices we use to entertain ourselves are complex, to be sure, and the ideas behind them are often hard to grasp. They are worth figuring out, however, if we're to choose the best equipment and make the best use of that equipment when we get it home. □

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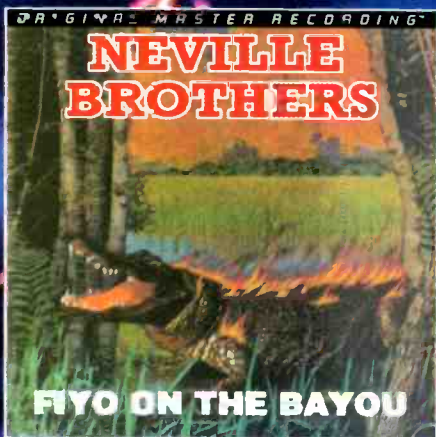
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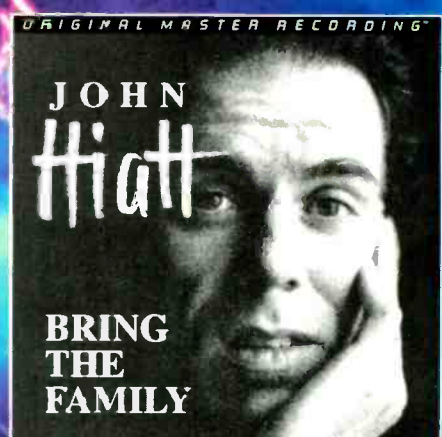


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# BEST OF THE MONTH REVIEWS

STEREO REVIEW'S  
CRITICS CHOOSE  
THE OUTSTANDING  
CURRENT RELEASES

## Bill Lloyd's Power Pop Masterpiece

“Set to Pop” is just about as fine a pop album to come along since Marshall Crenshaw's 1982 debut. Bill Lloyd, formerly the better half of the new-country duo Foster and Lloyd, has crafted a power-pop primer that will make even the most jaded listener perk up and take notice.

The Crenshaw analogy is not that far out, since the opening song, *I Went Electric*, which explodes in a frenzy of surging twelve-string hooks, gives way to a bridge sung in a familiar voice that turns out to be none other than Marshall Crenshaw. It's an appropriate cameo, for Lloyd picks up where Crenshaw left off with his nearly perfect first album, after which he strayed somewhat from the pure-pop path. Lloyd manages to stay the course, keeping focused on guitar-based music that's smartly crafted, tuneful, and heartfelt. There are more jangly guitar hooks on this album than you'll find in a Byrds boxed set, and they effectively underscore Lloyd's bittersweet first-person narratives of lovesick blues. Hummable, heart-tugging songs like *The Man Who Knew Too Much*, *In the Line of Fire*, and (especially) *Forget About Us* are bursting with raw feeling.

“Set to Pop” is fleshed out with nods toward kindred genres that Lloyd draws into his pop-centered universe. There's *Niagara Falls*, a droll and rootsy rocker from the Rockpile school; *In a Perfect World*, a heart-on-sleeve pop-country number that can hold its own against a classic like Poco's *Bad Weather*; and *This Is Where I Belong*, a choice Kinks obscurity for which Lloyd deserves a Grammy for Best Cover Song (if such a thing existed). He demonstrates a social conscience on *S.W.A.T. Team of Love*, which sounds like it was aimed at the more fanatical elements in the pro-life movement: “Yeah, you may wanna pass but they won't let you through / They'd rather that they make up your mind for you.” He's also written the most, well, sensible song about Elvis Presley to come along in a blue moon. *Channeling the King* is a mannerly jangfest in which the singer makes a supernatural connection with Elvis, causing him to opine, “He used to be a man not a sacred cow / It's



time to take the trash out and let the truth back in / Now I'm channeling the King.”

The album is further bolstered by track-to-track segues that include tantalizing snippets of unfinished songs, string instruments being detuned, a mock-heavy instrumental with power chords and mandolins that fondly bows to AC/DC, and a twangy speedball of a tune with the recurring line “Don't ever change” that I wish had been developed into a full-length number. But that's all part of this album's charm—it leaves you hungry for more. Take my advice and lay hands on it pronto. You won't hear a better one any time soon.

Parke Puterbaugh

### BILL LLOYD

#### Set to Pop

*I Went Electric: This Is Where I Belong; Trampoline: In the Line of Fire; I Know What You're Thinking; Forget About Us; Alright; The Man Who Knew Too Much; Niagara Falls; In a Perfect World; S.W.A.T. Team of Love; A Beautiful Lie: Channeling the King; Out of the Picture; Anything Less Than Love*  
ESD 80892 (56 min)

## Wand's Beethoven Just Gets Better

Günter Wand's new live recording of Beethoven's Fifth and Sixth Symphonies with the NDR Symphony Orchestra on RCA Victor brought to my mind the birthday-card announcement, “You're not getting older; you're just getting better!” Wand apparently feels that the live setting itself can take him nearer to the elusive goal of a perfect recording. All of his recent recordings have been derived from concert performances, among them Brahms, Bruckner, and Beethoven symphonies he had already recorded with distinction not long ago. His live “Eroica” was quite an advance on the impressive one in his integral set of the Beethoven symphonies with the NDR orchestra; the new Fifth and Sixth, taped in 1992 a few months after he turned eighty, not only supersede



Conductor Günter Wand

his own earlier recordings but offer the strongest challenges to all other current versions.

While it may not be realistic to cite any single recording of so well represented a work as the "Pastoral" Symphony as being the absolute "best," Wand's new one does seem virtually all-surpassing. The interpretation is essentially the same as before, but it is unarguably more fully realized in the live context. The opening phrase is given a more caressing shape now, the "Shepherd's Song" at the end is more radiant, and every note is made to count without distorting the natural flow in the slightest. No detail is left unrealized, and none is thrown into exaggerated prominence; throughout the five movements the momentum is so natural that such matters as tempo and phrasing do not seem to be calculated choices but to result from an unerring instinct. Ardor and elegance, rather than offsetting each other, go hand in hand, and the Hamburg players, with a bloom on the string sound and the richest and smoothest of wind playing, are on a par here with their more celebrated colleagues in Vienna, Berlin, and Amsterdam.

The Fifth, sensibly placed second on the well-filled disc, is every bit as satisfying. It's as dramatic as one might wish, straightforward and subtle at once, with plenty of thrust and excitement in the truly blazing finale. Because Wand, as always, refuses to compromise musical values to achieve dramatic ends, the jubilation is noble rather than merely hectic.

There is no recorded applause to break

the spell after either performance, and the vivid recording does them full justice in respect to both richness and detail.

*Richard Freed*

**BEETHOVEN:**

**Symphonies Nos. 5 and 6 ("Pastoral")**

NDR Symphony Orchestra, Wand

RCA VICTOR 61930 (79 min)

## Matraca Berg Gets in the Mood

Three years ago, singer-songwriter Matraca (that's Ma-TRACE-a) Berg recorded an all-but-ignored country album, "Lying to the Moon," that wowed the critics but didn't click in the real world. Alternatingly hard-edged and romantic, it established Berg as a writer far too talented and insightful to settle for country formula (she later contributed a number of memorable and intelligent songs to the repertoires of Reba McEntire, Patty Loveless, and Trisha Yearwood).

Now, for her second album, Berg has changed gears. She recorded "The Speed of Grace" in L.A. with a spare and lean core band that includes Jim Keltner on drums and Freddie Jackson on bass, and she gives full attention to the blues side that occasionally emerged on her debut. But instead of the song album one might have expected, she's created—with the help of producer Stewart Levine (Simply Red, Hothouse Flowers)—a mood piece. With few exceptions, the songs here are about deceit, regret, disappointment, and forgiveness in love, but it's the feeling you remember more than the lyric.

Berg can effectively play the California pop game, as in *Slow Poison*, a seductive blues about jealousy, *I Won't Let Go*, a pledge of trust to a wounded lover, and a reprise of the timeless *Lying to the Moon*. She begins to lose her focus on the Holly Near-ish *Guns in My Head*, an ambitious call to brotherhood sparked by the L.A. riots, and *Tall Drink of Water*, which sounds more manufactured than anything else she's ever done. But while "The Speed of Grace" is occasionally uneven, it's nonetheless an impressive album that begs repeated plays. Anyone who can transform Dolly Parton's *Jolene* into a dark, bluesy threat of spilled blood is al-

Matraca Berg: blues with feeling



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# BEST OF THE MONTH REVIEWS

ready an artist to remember, and when she really hits her stride Berg should be unstoppable. Get in on the ground floor now.  
*Alanna Nash*

## MATRACA BERG

### The Speed of Grace

*Slow Poison; Tall Drink of Water; Let's Face It; I Won't Let Go; Jolene; Guns in My Head; Waiting for the Sky to Fall; Lying to the Moon; Come to Momma; River of No Return*  
RCA 66351 (43 min)

## Bold, Jazzy Bach

**S**kip Sempé is an American harpsichordist who lives and works in Europe. He is famous (in Europe at least) for his lively improvisatory performances of French and Italian music—both solo and with his ensemble, Capriccio Stravagante. In a new CD on Deutsche Harmonia Mundi, he takes on Bach in the same manner. There's an improvisation based on the famous Chaconne in D Minor for solo violin, a wonderfully hyper version of a keyboard partita, and dashing, intimate performances of two harpsichord concertos (themselves arrangements by Bach of his own works).

As far as we can tell, this kind of jazzy performance was the norm in the seven-

teenth and eighteenth centuries but is common today only in jazz and rock. Few contemporary classical musicians have the ease, the freedom, and the boldness that it demands. It is amazing to hear dances that dance—a courante that flows and a gigue that jigs. Even the concertos rock and roll with a life-giving force that never flags.

The energy of these performances is incontrovertible. More controversial is the scoring and balance of the concertos: Solo strings are placed in *front* of the harpsichord, with an entirely unexpected effect—more like string-chamber-music-with-keyboard than a vehicle for an out-front soloist. Like it or not, the in-your-face sound is certainly intentional.

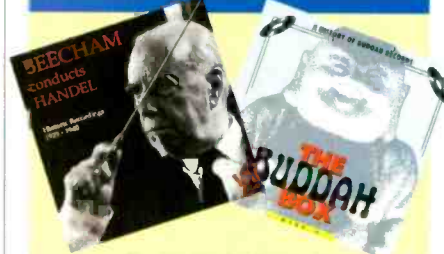
Sempé, a performer with a deep feeling for Baroque style *and* practice, puts his stamp on everything he does. That's truly the only logical place for period-music performance to go, and the result here is certainly much closer to the spirit of the music than the supposedly "correct" performances we usually hear. This is simply some of the most exciting old-music performing around.  
*Eric Salzman*

### BACH:

**Chaconne in D Minor; Harpsichord Concertos in D Major and A Major; Partita in D Major, No. 4**

Sempé; Capriccio Stravagante  
DEUTSCHE HARMONIA MUNDI 77222 (69 min)

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# POPULAR MUSIC

**NEW RECORDINGS REVIEWED**  
**BY CHRIS ALBERTSON,**  
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**RON GIVENS, ROY HEMMING,**  
**ALANNA NASH,**  
**PARKE PUTERBAUGH, AND**  
**STEVE SIMELS**

## he re ad r i an be lew

### ADRIAN BELEW

Here

CAROLINE 1748 (45 min)

**Performance: Enthralling**  
**Recording: Very good**

**O**n his new album, Adrian Belew accentuates his pop side, shelving his more experimental tendencies for another time. "Here" is a collection of sophisticated miniatures that dance around in the head like the bouncing blobs in a Lava Lamp; you can listen endlessly and hear something new with each spin. Belew has packaged twelve concise songs very much in the spirit and sound of the pop-psychedelic mid-Sixties. The Beatles are the obvious icons, from the melodic, looping McCartneyesque bass and startling *Paperback Writer*-Harrisonisms on guitar to the compressed, Lennon-inspired vocals and dreamy lyrics.

All the above elements come together to superb effect in such standouts as *May 1, 1990* and *I See You*, which open the album in an allusive way that leaves no room for misinterpretation.

Toward the second half of the album, Belew turns his attention to more contemporary concerns, specifically ecological holocaust. Here, his lyrical grasp doesn't quite match the reach of his music; lines like "The people of Holland ride ecological bikes" (*Postcard from Holland*) and "Technology is a double-edged sword" (*Brave New World*) seem stilted and obvious. But the injection of real-world issues into a lush, inviting pop dreamscape does prove that Belew is a realist as well as a dreamer. "Here" draws upon elements of the Sixties and the Nineties in an effort to synthesize a new way of addressing the future, and it does so quite listenably. *P.P.*

days, but if this is middle-of-the-road, look for Berry to start stopping traffic. *A.N.*

### CHEAP TRICK

**Woke Up with a Monster**

WARNER BROS. 45425 (49 min)

**Performance: Disappointing**  
**Recording: Good**

**C**heap Trick's first album for Warner Bros. is being touted as a comeback, but it's really just more of the same—only less so. Somewhere along the way this quartet lost the ability to write the sort of sparkling rockers that deftly married hummable and headbanging. In the hands of veteran hard-rock producer Ted Templeman, they come off like a second-rate Van Halen, complete with joyless guitar crunch, grating vocals, and stiff rhythm tracks. But the blame can't be laid entirely at the producer's feet. Cheap Trick wrote this batch of half-baked material, which ranges from the passable (*Didn't Know I Had It, Tell Me Everything*) to the cretinous (*Girlfriend, My Gang*).

Annoying, bratty backup vocals and unison chanting of juvenile hooks call to mind the worst tendencies of groups like Loverboy during the arena-crock dead zone of the Eighties. Gimmicky stabs at this 'n' that—the ZZ Top blues-funk of *Ride the Pony*, some jarring Latin percussion in *Love Me for a Minute*, the Led Zep-circa-*Kashmir* modality of the plodding title track—reveal Cheap Trick to be grasping at straws. Bereft of the wiry yet fresh-faced power pop that made their early albums worth owning, "Woke Up with a Monster" is a bogus attempt to reinvent Cheap Trick as a kind of humorless lite-metal act. Too bad. *P.P.*



### JOHN BERRY

LIBERTY 80472 (35 min)

**Performance: Haunting**  
**Recording: Very good**

**C**ountry newcomer John Berry doesn't wear a cowboy hat or dress in spangles, but you'll remember him after one spin through his debut. Not especially for his uptempo songs, like *Kiss Me in the Car* and *Somebody*, although those snake along like the sexy charmers they are. What makes Berry burrow in the brain is the way he delivers three killer ballads, *More Sorry Than You'll Ever Know*, *You and Only You*, and *When Love Dies*, all of which bring the singer to his knees in the kind of desperate moments of truth and pain usually reserved for the psychiatrist's couch. Coupled with power melodies, soaring choruses, and a tenor so big and expansive you get the feeling he had to hold back in the studio so as not to blow out the mike, it makes for a one-in-a-thousand debut. Country seems to be going more adult-contemporary these

Too mainstream for the alternative crowd? Too alternative for the mainstream crowd? Or sharp, savvy, and likable enough to please both camps? That last conjecture would seem to explain the mounting appeal of Cracker, a four-man band that is recognizably rootsy but doesn't really sound like anybody else. Head Cracker David Lowery formerly led Camper Van Beethoven through all sorts of eclectic fiddle-fiddle. Cracker is no less fearless but decidedly more streamlined in its plundering, which ranges from the punky *Movie Star* to the high lonesome Gram Parsons-style confessional of *I Want Everything*.



**Cheap Trick: the thrill is gone**

PHOTO: MARK SEIDLER/WARNER BROS.

Cracker's secret weapon is guitarist John Hickman, a Bakersfield-bred country-rock firebrand who packs a lot of six-string spunk. His glossary of thorny riffs and salty licks keeps "Kerosene Hat" hopping like a twelve-wheeler down a back road, giving *Sweet Potato* its lewd bump 'n' grind and propelling his own *Lonesome Johnny Blues* off on a rockabilly blue streak. Throw in a little surreal lyricism from the school of Captain Beefheart (*Kerosene Hat*) and a moody rocker that's fast approaching anthem status (*Low*) and you've got an album that may well be looked back on as a classic of its kind, inscrutable and hard to classify though it may be. P.P.

#### RODNEY CROWELL

##### Let the Picture Paint Itself

MCA 11042 (37 min)

Performance: In a reflective mood

Recording: Handsome

Once the leader of Nashville's progressive country songwriting pack, Rodney Crowell is now mellowing into middle age—but not without a fight. On his last outing, 1992's "Life Is Messy," Crowell was healing from his divorce from singer Rosanne Cash, and for the most part, his songs were as wobbly on their feet as Crowell was himself. This offering reunites him with producer Tony Brown, who piloted Crowell's most commercial album, "Diamonds and Dirt," in 1988. As with that record, this is a country album than Crowell might have come up with on his own. But as such, there's plenty here for country radio, like *The Best Years of Our Lives*, a rocking shuffle with Patty Loveless on harmony vocals, and *I Don't Fall in Love So Easy*, a gorgeous Everly Brothers-like ballad with Trisha Yearwood.

Crowell is especially reflective about Cash and their years together on four songs: *Stuff That Works*, a folksy ballad with a beautiful, lyrical stanza that not many men would write about an ex-wife; *That Ol' Door*, which uses the fortress gate that once fronted their house as a symbol of their relationship; *The Rose of Memphis*, which pays tribute to Cash's vocal abilities; and the elegiac *Once in a While*, which proves

Crowell has lost none of his gift for haunting melody. The singer-songwriter may have recorded more exciting albums before, used his voice in more expressive ways, and written better songs overall. But when this one works, it stays with you. Crowell isn't exactly a Nashville maverick anymore, but he's still holding his own. A.N.

#### JOHN HAMMOND

##### Trouble No More

POINTBLANK/CHARISMA 88257 (42 min)

Performance: Black and blue

Recording: Good

There are two schools of thought about John Paul Hammond, the blues-minded son of the legendary talent scout who signed Billie Holiday, Bob Dylan, and Bruce Springsteen. One is that the junior Hammond, who's been making records for thirty-two years and whose intense guitar and harp accompaniment rival his sandpaper vocals for emotional vibrancy and expression, is one of the finest interpreters of Delta blues. The other is that Hammond is a well-intentioned white boy who looks a little foolish in his desperate attempts to emulate his heroes John Lee Hooker and Howlin' Wolf. Of course, the truth is somewhere in between. Maybe he doesn't sound this way naturally, but so what? And when he's on top of his game, as he often is on this band-oriented recording with Little Charlie and the Nightcats, Hammond casts spells, works miracles, and cures the gout. He makes Charles Brown's *Trouble Blues* (one of two songs where Brown himself supplies piano) a moody and seductive lament, and he turns Blind Willie McTell's *Long Changin' Blues* into a tour de force, his bottleneck guitar sustaining an acoustic moan, and often rising to a piercing scream. Rarely does a singer bond so intimately with a guitar, so that it's literally a second voice. That may be only a white boy's magic, but it's magic nonetheless. A.N.

#### MIKE HENDERSON

RCA 66324 (30 min)

Performance: Twitch and twang

Recording: Raw and honkin'

Mike Henderson's name might not be immediately recognizable, but the songs he's written for others are (*Powerful Stuff* for the Fabulous Thunderbirds, *Mr. Man in the Moon* for Patty Loveless, *The Restless Kind* for Kevin Welch, to name a few). A former member of the band The Snakes, Henderson has spent the last few years as a much-in-demand country-blues session guitarist. On his solo debut, the emphasis is more on writing and singing than on picking, although there's plenty of heavy-string, high-action Silvertone twitch and twang here between the words. Often evoking a Levon Helm-like attitude and vocal quality, Henderson veers from the old-style, self-pitying ballad of *Prisoner's Tears* to the carnival tale rave-up of *Fountain of Youth*, working in the high-lonesome bluegrass flavor of *That Train Don't Stop Here Anymore*. Henderson knows how to weave a hillbilly fantasy (*If the Jukebox Took Teardrops*) and spin a mood. What's miss-

## SOUNDS OF THE STREETS



"The present day greaser refuses to die," Frank Zappa once noted in tribute to doo-wop, the vocal-based music that was one of the principal strains of Fifties rock. And in fact, back in 1960, Zappa himself wrote a memo-

orable doo-wop song, *Memories of El Monte*, for the Penguins, one of the genre's greatest groups. *Memories Isn't on "The Doo Wop Box"* (Rhino 71463, three CD's), a fabulous new anthology devoted to a style that still gets less critical respect than it deserves. But the Penguins' epochal *Earth Angel* is included, along with one hundred other songs by the likes of the Orioles, the Crows, the Cadillacs, the Flamingos, the Five Satins, and just about every group of note that ever harmonized a cappella on a city street corner. Great, innocently romantic stuff, beautifully remastered and fleshed out with detailed historical notes and cool photos. I'll bet Zappa would have loved it. S.S.

ing from this passel of good songs and passionate performances is an immediately identifiable persona. When he finds that Katy, bar the door. A.N.

#### LATIN PLAYBOYS

SLASH/WARNER BROS. 45543 (38 min)

Performance: Unpasteurized

Recording: Good

Stop making sense? Hey, the Latin Playboys didn't start out to make sense. This off-shoot of Los Lobos exists because of musical necessity. It began when David Hidalgo and Louie Perez couldn't break their momentum after working on "Kiko and the Lavender Moon," a rather arty effort from the lupine East L.A. outfit. As Hidalgo puts it, "Ideas kept coming in and we didn't want to shut them off." Neither did they want to edit them, so "Latin Playboys" is more than a little rough around the edges. In fact, some of these tunes seem more like the idea of a song, or perhaps the dream of a song that is only half-remembered in the light of day.

Aided by Mitchell Froom and Tchad Blake, who (respectively) have produced and engineered Los Lobos albums, Hidalgo



John Hammond: lost in the blues

and Perez take the music in directions that wouldn't be taken by that very accomplished band. *Chinese Surprise*, for example, sounds like Captain Beefheart on a Mexican holiday. And *If* takes the riff from John Coltrane's *A Love Supreme* and expands it into a skeletal blues about love on the most elemental level. A lot of "Latin Playboys" sounds like a work in progress, but coming from Hidalgo and Perez, who



normally craft their songs for Los Lobos to the *n*th degree, such in-between-ness can be fascinating. Consider this a musical sketchbook from a couple of masters—powerful because it is raw, revealing because the nits have not been combed out. So what if the big picture isn't quite in focus? The individual brush strokes pack a wallop. *R.G.*

**NRBQ**

**Message for the Mess Age**  
FORWARD/RHINO 7045 (43 min)

**Performance: NRBQ reborn**  
**Recording: Very good**

**N**RBQ is the world's best live band. Fun and unpredictable, they're the one group above all others you'd want playing your party. But their infrequent, indifferent and tentative studio recordings have, especially over the last decade or so, fallen way short. "Message for the Mess Age" announces that NRBQ has swallowed their misgivings about the studio and decided to give it their best shot. They sound worked up about the state of the world and hellbent on remedying the grievous inattention paid to them by the general public. "Message for the Mess Age" is a wake-up call—to themselves, to their fans, and to their fans-to-be (this means you).

It's a 40-minute tag-team special, with keyboardist Terry Adams coming at you hard and angry (*Over Your Head*), guitarist Al Anderson trying to coax some innocent thing into his corner (*A Little Bit of Bad*), and bassist Joey Spampinato—NRBQ's incurable romantic—trying to win the match with his kinder, gentler brand of seduction (*Ramona*). Drummer Tommy Ardolino is like the manager in the corner who prods things along when the ref isn't looking; his swinging, big-stick backbeat will send you reeling to the mat. The band is feeling downright feisty, delivering their "Message for the Mess Age" in no uncertain terms—stumping for personal freedom in *Don't Bite the Hand* ("Live your own life / Stay out of mine"), satirizing the robotic corporate music scene in *Big Dumb Jukebox*

("Now hold on, you know something's wrong when you never hear a real song"), knocking conformity and the deathly menace of tobacco in *Everybody's Smoking*.

Of course, it wouldn't be an NRBQ album without time-out for silliness, and they deliver in spades with *Spanpinato* (a name-game singalong to the bassist's last name) and their ode to *Girl Scout Cookies*. But for the most part they ask tough questions and set them to music that gives no quarter. Ultimately, like the Sex Pistols, they mean it, man. Don't miss this message. *P.P.*

**DAVID LEE ROTH**

**Your Filthy Little Mouth**  
REPRISE 45391 (48 min)

**Performance: Savvy**  
**Recording: Big**

**Y**our Filthy Little Mouth" finds Diamond Dave doing battle with Manhattan and emerging scarred but savvier. Maybe, like many lapsed Left Coasters, he no longer subscribes to the notion that we are living in the Pacific Age—after fires, riots, earthquakes, mud slides, and endless rending of the social fabric, he sure picked the right time to say goodbye to Hollywood. The one-time Van Halen frontman has reinvigorated his muse by relocating to New York City, which he refers to as "Calcutta on the Hudson." His street-level tales of excess may not exactly lead to the palace of wisdom, but he uncorks a barrage of witty one-liners ("Money talks, I should know, mine always says goodbye") and cultivates an overview that's both roguish and sage. Best of all, producer Nile Rodgers has given Roth's music a hip urban groove, a pedestal upon which he can pontificate with confidence.

Though the whole thing rocks with a ferocious swagger, Roth and company have thrown in enough changes of pace to keep things interesting: an ancient Willie Nelson saloon-style ballad (*Night Life*), a driving rocker that could grow hair on your guitar's neck (*Big Train*), a bit of hip-hop (*You're Breathin' It [Urban NYC Mix]*), and a Southern-style country rocker sung with Travis Tritt (*Cheatin' Heart Cafe*). Any album that can find room for David Lee Roth, Travis Tritt, and Nile Rodgers, and make it all work, gives evidence of a governing intelligence that's greater than your average rock star. In fact, Roth is one smart

**David Lee Roth: urban wiseguy**

cookie, and his versatility and wit make "Your Filthy Little Mouth" a crackling hoot from start to finish. *P.P.*

**FRANK SINATRA**

**Live in Paris**

REPRISE 45487 (74 min)

**Performance: C'est si bon!**  
**Recording: Surprisingly good**

**T**aped at the Paris Lido during a 1962 international tour (and locked in the vaults ever since), "Live in Paris" captures the ace Ring-a-Dinger soon after he left Capitol and began recording for Reprise, a period some feel remains his vocal and stylistic peak. Instead of the usual big Nelson Riddle or Billy May bands, Sinatra toured with a sextet of jazz veterans (led by pianist Bill Miller), most of whom had worked with him over the years in the L.A. studios.

The two opening numbers are tossed off a bit lackadaisically, but with the third song, *At Long Last Love*, things come together too sweet—and from then on Sinatra's in prime form. Most of the songs are in the brightly punchy, easy-swinging vein that no one has ever done better than Sinatra, and the sextet backing him shows it can make as big and driving an impact as any full orchestra. Sure, a few notes start to go awry here and there, but Sinatra is a master at covering them quickly in ways that make sense both musically and lyrically. And, yes, he takes a few typically debatable liberties with some of the lyrics, but almost never at the expense of a song's intent.

All of the twenty-six selections appear on other Sinatra studio albums, but the arrangements for many of them vary here in intriguing ways, including as poignant a *Night and Day* as you'll ever hear (with Al Viola's sole guitar accompaniment) and a world-weary *Ol' Man River* that's light years away from Sinatra's dreadful MGM version. "Live" Sinatra albums have been more infrequent than you might expect, but what a gem this one turns out to be! *R.H.*

**SONIC YOUTH**

**Experimental Jet Set, Trash and No Star**  
DGC 24632 (48 min)

**Performance: Scattered**  
**Recording: Okay**

**T**he difficulty in commenting on something that presents itself as avant-garde—or "artcore," as Sonic Youth terms their latest—is that it almost by definition defies critical scrutiny. If you don't like it, "you don't understand it" is the standard rebuttal. For the most part, I neither like nor understand "Experimental Jet Set, Trash and No Star." It seems like backsliding on the band's part to affect the subdued, atonal artnoise on this, their tenth album. Maybe they're honestly reflecting what's going on in their lives without filtering or formatting it in any way for mass consumption. But it makes for difficult listening that's ultimately not challenging so much as defeating.

"Down to the bottom and oh what a bottom it is . . . uh-oh," bassist Kim Gordon moans in a foggy funk in "Skink," as instruments circle, founder, and sink into an aerobic muck. Songs never even try to come up for air, suffocating in the swamp-

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like environs of the group's collective catabonia. Gordon's petulant, breathy vocals and Thurston Moore's beyond-the-grave whine are set against a static backdrop of guitars caught up in a web of inertia that envelops the whole project. Maybe Sonic Youth is trying to slough off some of the growing audience they've acquired since going major label in order to hang onto precious alternative credibility. But they sound like they're collapsing in on themselves and have chosen to document the turmoil. The process itself is fascinating, but the album is a self-indulgent drag. *P.P.*

## Collections

### ALL MEN ARE BROTHERS: A TRIBUTE TO CURTIS MAYFIELD

WARNER BROS. 45500 (76 min)

Performance: Very enjoyable

Recording: Very good

You never know with a tribute album. In the rock era, with the dominance of tunesmiths who are the primary interpreters of their own material, the song cannot always be successfully separated from the songwriter. This new Curtis Mayfield project is a mixed bag, although that bag is made of the finest cloth. Mayfield's tunes epitomize soul in all the important ways. Musically, they can be funky and buoyant, exciting and soothing; spiritually, they capture humanity in all its rich complexity. Listening to them, though, is always great fun, and on this album Gladys Knight, Whitney Houston, the Isley Brothers, B.B. King, and Stevie Wonder go straight to the heart of Mayfield. Tevin Campbell, with his velvety rendition of *Keep On Pushin'*, goes even farther, almost making the tune his own. Steve Winwood, Eric Clapton, and Rod Stewart turn in workmanlike versions of *It's All Right, You Must Believe Me*, and *People Get Ready*, respectively. And although Bruce Springsteen goes seriously wrong with a brooding, somewhat dull anti-version of *Gypsy Woman*, even this misstep is fun to hear. Tribute albums may not be the true measure of songwriting greatness, but "All Men Are Brothers" shows that Mayfield's writing is not just universally appealing, it's downright indestructible as well. *R.G.*

### BRACE YOURSELF: A TRIBUTE TO OTIS BLACKWELL

SHANACHIE 5702 (42 min)

Performance: Great fun

Recording: Fine

If there had been no Otis Blackwell, would Elvis Presley have seduced a nation? It's a fair question. For not only did Blackwell write several of Presley's signature tunes (*Don't Be Cruel, All Shook Up*), but Presley was also known to copy Blackwell's demos, sometimes down to the smallest stylistic nuance. Yet that was hardly Blackwell's only claim to fame; this is a man who counts *Fever, Hey, Little Girl, Handyman*, and *Great Balls of Fire* among his thousand or so songs.

On first listening to this irresistibly spir-

ited collection of his tunes, recorded by old-line rockers, blues vets, and alternative-rock turks, it's a jolt to hear Tom Verlaine hallucinate through *Fever* and Kris Kristofferson transform *All Shook Up* into a cowboy campfire lament, complete with harmonica. But there's no denying that this is a romp from start to finish—lots of raw, chummin' guitars and heavy backbeat—and it's a delight to hear how such disparate performers, Brits and Yanks alike, interpret Blackwell's timeless material. It's also no exaggeration to say that Blackwell, who grew up in Brooklyn idolizing Tex Ritter, helped pour the very foundation of classic rock songwriting, and every artist here performs with full knowledge and appreciation of that fact. Blackwell suffered a stroke in 1991, and half of the royalties on this record will be donated to him. Go ahead, give a little back. *A.N.*

### THOMAS PYNCHON IS LISTENING...

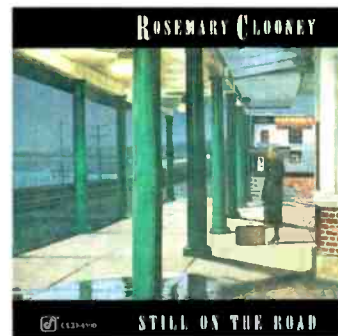
He's the most famous phantom in American letters, the brilliant novelist (*Gravity's Rainbow, Vineland*) who's never divulged the least biographical info or been interviewed or photographed at any time in his career. Now, however, comes a clue to what kind of music Thomas Pynchon plays at home (wherever that is). Seems the legendarily privacy-obsessed author was asked (via his agent) if a mention of him could be written into a recent episode of NBC's *The John Laroquette Show*. Surprisingly, Pynchon agreed—but on condition he was said to be wearing a T-shirt with the likeness of Roky Erick-



Pynchon (pre-psychedelia) in 1955

son. Erickson, the often-institutionalized Sixties Texas psychedelic rocker (*You're Gonna Miss Me*) who inspired "Where the Pyramid Meets the Eye," a 1990 tribute album (Sire 26422) featuring ZZ Top, R.E.M., Doug Sahm, and the Jesus and Mary Chain, is currently in the studio with guitar-whiz Charlie Sexton. No word yet whether Pynchon will drop by. *S.S.*

## JAZZ REVIEWS



### ROSEMARY CLOONEY

*Still on the Road*

CONCORD JAZZ 4590 (55 min)

Performance: Bright and breezy

Recording: Very good

What is it with Rosemary Clooney? Unlike other singers whose voices fall apart the older they get, hers gets better and better. This latest album finds her in a generally jaunty mood, with even the quieter ballads having a genially easy-swinging lilt. The fifteen songs are loosely tied together by a travel theme similar to two of her best late-Fifties albums with Bing Crosby. This time her route takes her from Willie Nelson's *On the Road Again* to Dave Fishberg's *Let's Eat Home*, with international stops along the way via Kern, Porter, and Jobim, plus a couple of vocal duets with arranger Earl Brown and trumpeter Jack Sheldon. It's a first-class trek. *R.H.*

### CYRUS CHESTNUT

*Revelation*

ATLANTIC JAZZ 82518 (60 min)

Performance: Revelation, indeed

Recording: Excellent

Baltimore-born pianist Cyrus Chestnut has worked with some of the finest of the new breed of New York jazz musicians, as well as with Betty Carter. On "Revelation," Chestnut's trio—with fellow Carter alumni Christopher J. Thomas and Clarence Penn—breezes through a program that is varied in both selection and approach. Chestnut is an exceptional musician who combines flawless technique with engaging inventiveness. Whether immersing himself deeply into a blues (*Lord, Lord, Lord*), swinging furiously (*Macdaddy*), making a spiritual solo statement (*Sweet Hour of Prayer*), or lovingly updating Debussy (*Elegie*), the young Berklee graduate is thoroughly absorbing. *C.A.*

### JACKIE MCLEAN

*The Complete Blue Note 1964-66 Jackie McLean Sessions*

MOSAIC 150 (four CD's, 243 min)

Performance: Involving

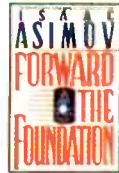
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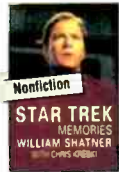
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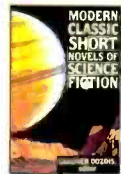
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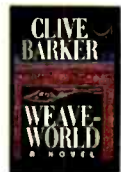
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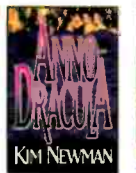
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# QUICK FIXES

## JIM BASNIGHT

### Pop Top

PRECEDENT 1003 (73 min)

Very nice solo album by a Seattle power-popper (formerly of the well-regarded Moberlys) going against the commercial grain of his hometown scene, and more power to him. Lots of requisite chiming guitars here; ditto strong tunes and mucho heart. Pick hit: *Asphalt Field*, which rocks out more convincingly than usual for the genre. S.S.



## BLUE MURDER

### Nothin' but Trouble

GEFFEN 24419 (56 min)

Slick but basically forgettable hard rock from a bunch of unapologetic Guns 'n Roses wannabes. Mitigating factor: a cover version of the Small Faces' *Itchycoo Park* that cuts anything on GNR's recent "The Spaghetti Incident?" S.S.

## KEALOHA KONO AND HIS ORCHESTRA

### Sounds of Hawaii

LASERLIGHT 228 (35 min)

Sounding like the dance band in a tourist hotel at Waikiki Beach, this CD perfectly evokes my one carefree visit to Hawaii. Perennial hits like *Blue Hawaii*, *Lovely Hula Hands*, and *Aloha Oe* are played at the right tempo for the Box Step or Businessman's Bounce. A bit square, a bit corny, and I love it. William Livingstone

## CHRIS NORMAN

### The Beauty of the North

DORIAN 90190 (60 min)

The sound of a wooden flute, button accordion, fiddle, guitar, and bass blend with a tang of authenticity in twenty-eight short, atmospheric, traditional dance tunes from Scotland and from Quebec, Nova Scotia, and other parts of Canada. These are virtuoso performances of unfamiliar folk music. Ingratiating. W.L.

## THE PAPER

### Original Motion-Picture Soundtrack

REPRISE 45616 (37 min)

Randy Newman is a genuine pop genius, and his music for "The Natural" constitut-

ed one of the few possibly great American film scores of the last decade. His latest effort, however, is as middlebrow and fluffy as the film it accompanies, kind of like a Nineties update of Leroy Anderson. Of course, maybe that was the idea, but it's disappointing nonetheless. S.S.



## SCHOOLY D

### Welcome to America

RUFF HOUSE/COLUMBIA (49 min)

Public Enemy's Chuck D once called rap music the inner-city equivalent of CNN. But these days rap more often resembles the Fox network. Exhibit A: "Welcome to America," a bunch of foul-mouthed rape, murder, and revenge fantasies that (even if meant ironically) are so dumb they make *Married with Children* look like after-dinner conversation by Noël Coward. S.S.

## SERIAL MOM

### Original Motion-Picture Soundtrack

MCA 11052 (39 min)

Leave it to writer/director John Waters—Baltimore's pre-eminant trash esthete—to mix L7's all-girl punk racket (*Gas Chamber*) with Barry Manilow's shopping-mall sentimentality (*Daybreak*). The orchestral score (by Basil Poledouris) for Waters' latest cinematic affront is equally droll, sounding like some Fifties weepie directed by Douglas Sirk. A hoot of an album. S.S.

## SEXY WAYS—THE BEST OF HANK BALLARD AND THE MIDNIGHTERS

RHINO 71512 (55 min)

A nice greatest-hits package from the guy who wrote and recorded the original *The Twist*, among other accomplishments. This may not be the slickest R&B vocal group imaginable, but by and large what's here—including the epochal (and for its day salacious) *Annie* trilogy—is highly entertaining. S.S.

## STEVE YOUNG

### Switchblades of Love

WATERMELON 1016 (49 min)

One of the finest progressive country writers of the mid-Seventies, Steve Young all but disappeared in the Eighties, a predictable turn of events for a writer of his caliber in the "Urban Cowboy" era. Now, on his first studio album in ten years, he's backed by Van Dyke Parks, Katy Moffatt, Benmont Tench, and Bobby Neuwirth, and displays all of his old songwriting fire. Superb. A.N.

supposed to do, putting an important chapter in a major performer's recording career into sharper focus. The music here dates from a period when alto saxophonist Jackie McLean was one of only a handful of established musicians who had absorbed the innovations of Ornette Coleman. Compared to what came just before them—McLean's pianoless quintet with vibist Bobby Hutcherson and trombonist Grachan Moncur III—the thirty-two tracks collected here were more bound to convention in terms of both instrumentation and harmonic contour. Yet they hardly marked a retrenchment on McLean's part. He attacked these numbers with reckless abandon, twisting a jagged path through chords and modal vamps on the uptempo pieces and biting into the occasional ballad (such as trumpeter Charles Tolliver's beautiful but rugged *Wrong Number*) in such a way as to rid it of all sentimentality. The participation of such luminaries as Hutcherson, Lee Morgan, Herbie Hancock, Roy Haynes, Billy Higgins, and Jack DeJohnette on these various dates further enhances the set's value, as do the late David Rosenberg's insightful liner notes. [Available by mail-order only from Mosaic Records, 35 Melrose Place, Stamford, CT 06902; telephone 203-327-7111.] F.D.



## BOB MINTZER

### Only in New York

DMP 501 (68 min)

Performance: Excellent  
Recording: Excellent

Rooted in the past and framed in the present, Bob Mintzer's arrangements offer big-band fans a refreshing alternative to the "ghost" bands that refuse to die but somehow sound as if they had. "Only in New York" is the saxophonist and leader's seventh big-band release, and his creativity is as obvious as ever. All but one of the ten selections are Mintzer originals, the solos are by some of New York's finest studio musicians, and the ensemble is propelled by a superb rhythm section featuring pianist Phil Markowitz, bassist Jay Anderson, and drummer John Riley. The most original arrangement is *Good Morning, Good Day, Good Night*, which features trombonist Mike Davis; it begins with a free-form wake-up time on the farm and smartly evolves into a pulsating urban affair before the cows come home. Mintzer's vocal on *TV Blues* is the only part of this set that doesn't work for me; the rest is a delightful harmonic weave that swings like mad. C.A.

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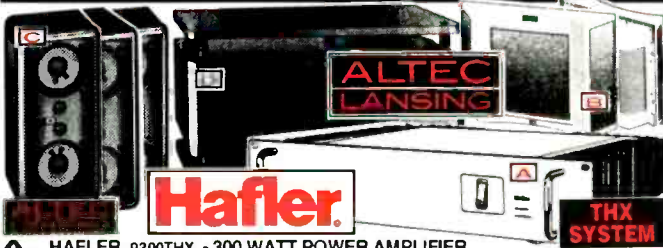
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creates memorable, at times mesmerizing tone pictures, ranging from the unforced folksiness of *Rheinlegendchen* to the understated yet biting irony of *Lob des Hohen Verstandes*. He captures the entertaining rusticity of *Verlorne Mühl!* and the deep despair of *Der Tamboursg'sell*. All these move at unhurried and comfortable tempos—only in *Wo die Schönen Trompeten Blasen* does he sound a trifle self-indulgent.

Although Mahler did not specify the practice of dividing the *Wunderhorn* songs between male and female interpreters, it usually makes good sense. But Hampson handles them all very well. He is a high lyric baritone, and what he lacks in rich sonority is compensated for by the heady resonance of his top range and the smooth command of his middle voice. The exquisitely floated ending of *Der Schildwache Nachtlied* impressively demonstrates his artistry.

This recording also differs from its predecessors in being more comprehensive. In addition to the twelve songs originally published with orchestrations in 1892, Hampson—who uses Mahler's own piano reductions, performed by Geoffrey Parsons—includes three others: *Urlicht*, previously heard only in its orchestrated form; *Das Himmlische Leben*, familiar as a soprano solo in Mahler's Fourth Symphony; and *Es Sungen Drei Engel*, the alto solo with chorus in the Third Symphony. *Des Knaben Wunderhorn* demands a lot from its interpreters, and Hampson has risen to its challenges with extraordinary skill and imagination. Parsons is a worthy keyboard partner, the recorded balances are exemplary, and so is the overall sound. *G.J.*



**MOZART: Così fan tutte**

Soloists: Monteverdi Choir;  
English Baroque Soloists, Gardiner  
DEUTSCHE GRAMMOPHON ARCHIV  
437 829 (193 min, three CD's)

**Performance: Entrancing  
Recording: Excellent**

**R**ecorded live and uncut at Ferrara's Teatro Comunale in 1992, this set embraces the arresting qualities of a stage performance: action building to culmination, audience laughter and applause, and occasionally sounds of stage business; hearing it is the next best thing to attending in person. It is the most joyous and fully realized recorded *Così*—for me, Mozart's greatest opera—since Fritz Busch's legendary 1935 Glyndebourne recording.

John Eliot Gardiner, who staged the production as well as conducting it, cast

singers with whom he has often worked—all eminently qualified both musically and dramatically. As founder of the Monteverdi Choir and the English Baroque Soloists, he is comfortably at home with these groups and totally in control. The result is lively, easy, propulsive opera.

The music is always the prime concern, and rightly so, for the personalities of the characters are inseparable from Mozart's vocal lines. The period instruments make transparent his delicate, witty, crystalline orchestration, which is often obscured by the richer, darker timbres of modern instruments. The singers ornament their vocal lines, as Mozart would have expected.

As Fiordiligi, the stronger of the two sisters, soprano Amanda Roocroft conveys her initial dominance with impressive vocalism; her later weakening in Act II is affectingly poignant. Dorabella, gracefully portrayed by soprano Rosa Mannion, starts out staunchly with her mock-heroic "Ah, scostati!" but soon discovers the pleasures of flirtation; her Act II "È amore un ladrocello" is the delighted expression of a young woman in love with life. As the stalwart, confident, and ultimately disquieted lovers, the outgoing Guglielmo and the more reflective Ferrando, respectively, baritone Rodney Gilfry and tenor Rainer Trost sing with exemplary style and dramatic persuasion. The Despina of soprano Eirian James and the Alfonso of bass Carlos Feller are wholly engaging. Despina's clowning in disguise is controlled, and her arias as the maid-servant are delectably pert. The orchestral playing has a crispness, accuracy, and spiritedness that are seldom experienced; the choir's brief contributions enhance the Act I leave-taking and the Act II finale. Heartily recommended! R.A.



**SCHUBERT: Symphonies (complete)**

Royal Concertgebouw Orchestra, Harnoncourt  
TELDEC 91184 (four CD's, 264 min)

**Performance: Strong-minded**  
**Recording: Resonant and natural**

Schubert's symphonies are such a motley assortment of music that they've never made for very cohesive programming as a complete "cycle." Unlike Beethoven's, Schubert's development as a symphonist was fitful and loaded with detours. It could be said that he never really found his own symphonic voice until the "Unfinished" and "the Great C Major"—renumbered as Nos. 7 and 8, respectively, in this set, which follows the New Schubert Edition in dropping the fragmentary work previously called

Symphony No. 7. Nonetheless, in Nikolaus Harnoncourt's hands the cycle seems remarkably unified.

The beginnings of Schubert's rich, forward-looking chord structures, which come to full flower in the final two symphonies, are apparent in the predominantly lyrical First Symphony and to a greater extent in the surprisingly substantial Fourth. Some of the idiosyncratic brass dissonances and wind writing in his last symphony are found under the Rossinian surface of the Sixth, the "Little C Major," which is sometimes dismissed as misguided fluff. The one symphony that doesn't come off convincingly here is the Second.

Harnoncourt could be accused of shoe-

horning all eight symphonies into a single sound world—particularly the buoyantly lyrical Fifth, which is played here without its usual Italianate warmth. But these aren't the sort of denatured readings usually associated with historical-performance specialists. The performances may lack some sensuality, but their Klemperer-style weightiness and freedom with tempos make them extremely strong-minded, and there are moments that are unforgettable. The famous second-movement climax of No. 8, for instance, has a riveting, inexorable momentum, followed by an equally dramatic release of tension.

Elsewhere there's a sense of long-range harmony that results in steep peaks and val-

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leys, made all the more dramatic by the playing of the Royal Concertgebouw Orchestra, which adopts a highly transparent, vibratoless sound but delivers substantial body when necessary. Harnoncourt tends to let balances take care of themselves, and they don't always. But the naturalness of the recording is refreshing after all the artificial "spotlighting" used in so many others these days. *D.P.S.*

**VERDI: Requiem; Four Sacred Pieces**

Studer, Lipovsek, Carreras, Raimondi;  
Vienna State Opera Chorus; Vienna Philharmonic, Abbado  
DEUTSCHE GRAMMOPHON 435 884  
(two CD's, 127 min)

**Performance: Very good**  
**Recording: Mostly good**

**V**erdi's majestic Requiem, with its alternating spiritual elevation and terrifying shudders, invariably creates a deeply emotional experience. It can be overwhelming when performed by four top-level singers and an outstanding chorus and orchestra under the right conductor. While that is the case here, the overall result leaves room for criticism, especially of the recording itself, done live at Vienna's venerable Musikverein. The sound is too reverberant, and the spotlighting of soloists is less than ideal, particularly in the "Rex tremendae majestatis" and "Offertorio" sections.

Claudio Abbado, whose second recorded

Verdi Requiem this is, presides over a well-controlled performance in which the thunderous pages of the *Dies Irae* are given their powerful due without excessive hysteria. The dynamics are wide-ranging in the extreme: If you play the fortissimo passages at less than lease-breaking levels, *ppp* passages are inaudible. The chorus's articulation is not perfect, but the overall sound is rich and powerful, and Abbado's tempo choices are invariably wise.

Soprano Cheryl Studer is in radiant form throughout, and breathtakingly so in the andante portion of the "Libera Me." Studer and mezzo Marjana Lipovsek form a lovely blend in the Agnus Dei, but Lipovsek's velvety and dignified singing here and elsewhere deserves more aural presence. Ruggero Raimondi, a Requiem veteran, lacks the ideal gravity of tone, but he sings with a smooth and steady flow of consoling legato, though with little emotional involvement. José Carreras supplies that involvement in abundance, and he carefully observes Verdi's frequent markings of *dolce* ("sweet"). The opening phrases of the Kyrie sound quite effortful, and, in fact, all his notes above the staff show some strain, but he is in there, doing his best.

The Four Sacred Pieces rank with the best ever recorded. Cheryl Studer does her brief stint in the Te Deum to perfection. I have the same reservations about the sonics as in the Requiem, however. *G.J.*

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Simón Bolívar Symphony Orchestra, Mata  
DORIAN 90179 (62 min)

**Performance: Careful**  
**Recording: Too careful**

**A**lthough Latin America is a world leader in popular music, its symphonic music is much less known. Here are orchestral pieces by Cuban, Brazilian, Venezuelan, and Mexican composers performed by Venezuelans under a Mexican conductor. The musical interest of the program increases as it goes on, starting with three rather Coplandesque orchestrations by Julián Orbón and continuing with the complete Villa-Lobos *Bachiana-Brasileira No. 2* (the familiar "The Little Train from Caipira" is only one of four intriguing movements), Antonio Estévez's evocation of the great grassy wet plains of central Venezuela, *Midday on the Llanos*, and the powerful *Sinfonía India* of Carlos Chávez, his masterpiece.

With the partial exception of the Chávez, the performances and recordings are a trifle restrained, exhibiting more care than passion, and the misleading translations in the track listing are annoying ("The Little Train of the Brazilian Countryman" is wrong in any language). In spite of those problems, there is a lot of music to discover here. *E.S.*

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# QUICK FIXES

**HANDEL: Concerti Grossi, Op. 3**

Les Musiciens du Louvre. Minkowski  
ERATO 94354 (60 min)

It's about time Marc Minkowski and his crackerjack group of period-instrument specialists made a purely orchestral recording. These performances of Handel's most familiar concerti grossi are delicious, and they seem downright emotionally liberated compared with more stylistically constricted versions. *D.P.S.*

**RAVEL: Daphnis and Chloe; Pavane for a Dead Princess**

Atlanta Symphony, Levi  
TELARC 80352 (65 min)

The various episodes of Ravel's great ballet are well delineated, the orchestra and chorus respond beautifully to Yoel Levi's direction, and the sound is prime Telarc. But the label has abandoned its usual thoroughness in labeling and track access, providing only three tracks for this hour-long work and no subsection list. While satisfying enough, this *Daphnis* is not in the same league as the ones under Monteux and Dutoit, and the tastefully performed *Pavane* hardly tips the scale. *R.F.*



**RIMSKY-KORSAKOV: Scheherazade  
STRAVINSKY: Firebird Suite**

Orchestre de l'Opéra Bastille, Chung  
DEUTSCHE GRAMMOPHON 437 818  
(63 min)

The 1919 *Firebird* suite turns up less frequently now that the full ballet score has come into favor, but it makes an imaginative and effective coupling for *Scheherazade*. Both works are done to a turn by Myung-Whun Chung, who makes great musical sense of them while realizing their dazzling colors to the full. With unexaggeratedly realistic sound, this CD is a real winner. *R.F.*

**TCHAIKOVSKY: "Rococo" Variations; Pezzo Capriccioso; Nocturne**

**SHOSTAKOVICH: Cello Concerto No. 1**

Rosen; Sofia Philharmonic, Tabakov  
JOHN MARKS/ALLEGRO JMR 3 (63 min)  
Cellist Nathaniel Rosen takes an expansive view of the two big works; he's never in a hurry yet never lingers too long over a phrase or in any way impedes momentum. His tone is handsome, Emil Tabakov's conducting is fully in sync, and the two shorter items are agreeable fillers.

The entire program is more than agreeable in its undemonstrative way, and it's given a considerable boost by the altogether exceptional sound quality. *R.F.*

**EMERSON STRING QUARTET**

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DEUTSCHE GRAMMOPHON 437 537  
(68 min)

John Harbison's five-movement String Quartet No. 2 (1987)—written in a personal, airy style, with a lot of mystery and intriguing ambiguities—is among his best works. The more dissonant, expressionist Quartet No. 2 (1934) by Richard Wernick and Gunther Schuller's Third Quartet (1986) aren't as immediately communicative, but the Harbison is worth the price of the disc. *D.P.S.*

**JERRY HADLEY**

**In the Real World**

RCA VICTOR 61937 (47 min)

In an era of tenor superstars, America's Jerry Hadley may well be the most versatile, certainly when it comes to crossover projects. Here is an exceptionally well-planned and well-executed "cycle" of fourteen pop standards about the pleasures and pitfalls of romantic relationships, from a starry-eyed *In a Sentimental Mood* and an insightful *Lush Life* to a biting *I Don't Remember Christmas*. Paul Gemignani and the American Theatre Orchestra provide first-class accompaniments. *Roy Hemming*

**MEDITATIONS AT SUNSET**

English String Orchestra; others  
NIMBUS 7010 (60 min)

Ten carefully chosen, well-recorded short pieces or movements make up this program of soothing orchestral music. The moods vary, as do the composers—from J. C. Bach and Boyce to Prokofiev and Bartok—but a thread of serenity runs through everything. Nice accompaniment for an intimate visit in a quiet setting, it's also excellent for stress reduction after a hard day at work. *William Livingstone*



**UAKTI**

**I Ching**

POINT 442 037 (53 min)

An engaging oddity that could be described as a combination of Villa-Lobos, pop percussion, world beat, and Brazilian New Age. Uakti is two percussionists and a multiwind player, all Brazilians. The music, conceived for dance, is very kinetic but also has a certain wit to go with the bounce. The recorded sound is close and very intimate. *E.S.*

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2	Adcom	33
1	Adcom	34-35
3	Adcom	36
40	Allison Acoustics	4
—	America Online	40a,b
—	The Basic Repertory on CD	10
5	BIC America	31
—	Blue Note Records	32
—	BMG CD Club	16a,b
—	Bose	11, 26-27
10	Boston Acoustics	9
6	Cambridge SoundWorks	38-39, 55
24	Celestion	59
12	Chrysler/Neon	C2-1
—	Crutchfield	58
26	DCM	22
15	Definitive Technology	46, 47, 49
51	Digital Music Systems	10
—	Ford Audio	C3
20	GMC Truck/Sierra	51
—	Illinois Audio	102
22	J&R Music World	92-93
13	KEF	25
23	Klipsch	C4
46	M&K Sound	43
—	Marlboro	12-13
25	Mobile Fidelity	80
30	New West Electronics	101
53	NHT	14
—	Pioneer	2-3
28	Polk Audio	52-53
31	Radio Shack	7
43	RDL Acoustics	29
—	The Science Fiction Book Club	91
—	Seagram's	19, 21
—	Service Merchandise	100
—	Sixth Avenue Electronics	98-99
—	Sound City	95
37	Telarc	85
—	U.S. Army	45
42	Vandersteen	83
41	Velodyne	60
—	Yamaha	23

June

# The Tokyo String Quartet

## Twenty-Five Years Young

BY HERBERT KUPFERBERG



Few Japanese exports have settled more comfortably into the American market than the Tokyo String Quartet. As its twenty-fifth anniversary approaches this fall, the Tokyo has finished such blockbuster recording projects as the complete quartets of Beethoven, Schubert, and Bartok, has explored some of the odd crannies of the literature, and has won acclaim from audiences and critics alike for its distinctive combination of musicianship, technical precision, and silken tone.

To those qualities the quartet has in recent years added a new musical vigor and even boldness, which have been ascribed, both by outside listeners and by the players themselves, to the input of Peter Oundjian, the quartet's first violinist—and its first non-Japanese member. Oundjian is Canadian by birth, Armenian by descent, and British by education. But he wasn't selected to further the quartet's multiculturalism. When the original first violinist left in 1981, Oundjian was asked to join, cellist Sadao Harada told me when I spoke with the quartet, "because he was compatible and because we enjoyed playing with him."

Violist Kazuhide Isomura, like Harada a founding member of the quartet, believes that Oundjian's advent changed the "chemistry" of the ensemble, all of whose members were trained together at the To-

ho Music School in Tokyo and later went together to the Juilliard School in New York City. Second violinist Kikuei Ikeda explained, "We always played well together, but until Peter came with his individual approach, we were not able to bring out the differences in our personalities."

Oundjian, at thirty-seven some ten years younger than his colleagues, observed, "One of the great strengths of Japanese culture is the ability to work as a group. But that's

only a strength up to a point, because independence is often discouraged, and in music spontaneity and creativity are key elements."

So successful has been the Tokyo Quartet's musical amalgam that the group currently averages about 125 concerts a year. Their recording activities with RCA Victor (with which they have an exclusive contract) are almost as hectic. Rave reviews greeted their recordings of the Beethoven quartets, in three boxed sets. The three-CD "Early Quartets" package also includes such oddities as Beethoven's quartet transcription of his Piano Sonata No. 9 and his seldom-heard String Quintet in C Major (performed with Pinchas Zukerman), a work that Oundjian describes as "a masterpiece."

Other recent CD's include an offbeat recording of two guitar quintets by Boccherini and one by Castelnuovo-Tedesco, with the guitarist Kazuhito Yamashita in all three. The Tokyo Quartet's collaborators have also included Richard Stoltzman (in the Mozart Clarinet Quintet), Alicia DeLarocha (in the Schumann Piano Quintet), Barry Douglas (in the Brahms Piano Quintet), and James Galway (in the Mozart Flute Quartets).

Oundjian cheerfully acknowledged that RCA has had a strong voice in the choice of guest performers, but he said the quartet is delighted to be playing with artists

of such caliber. He also pointed out RCA's hearty approval for their release last year of an all-twentieth-century CD—Britten's Quartet No. 2, Barber's String Quartet, and a work by Toru Takemitsu. "Not every record company would be eager to produce those [pieces]," he noted with satisfaction. "We've made many suggestions for recording certain works, and RCA has never said no."

The quartet has planned some special twenty-fifth-anniversary activities for the 1994-1995 season. "There'll be some extra concerts and, I hope, some unexpected pleasures," Oundjian said. "One project we are working on is a six-concert Beethoven series in New York—three at Carnegie Hall, three at Avery Fisher Hall in Lincoln Center—to benefit Classical Action" (a nonprofit organization that raises funds for AIDS service programs nationwide).

Oundjian doesn't share the widespread feeling that the chamber-music audience is an aging one. "I think what happens is that people graduate into chamber music from other kinds of music, both symphonic and popular," he explained. "Many don't become interested in it until middle age. But one of our goals now is to somehow become more involved with children." Everyone in the quartet is married and has children, so their interest in the next generation begins at home.

"I'd also like to try videotapes," Oundjian continued. "You can help control people's ears with their eyes. Beethoven's *Grosse Fuge* can be a complete jumble at times, but with a camera you can bring out the musical line by focusing on various players. There are a lot more things we can do than play Beethoven in concert halls."

Even as they work on reaching out to audiences, the quartet keeps polishing the art of internal communication. As Isomura explained, "When you rehearse in Japanese, you tend to imply rather than say things. But English is a very clear and expressive language, where you can communicate very plainly. Now that we've learned more English, we are more direct with each other. No more bullshit." □

**Herbert Kupferberg**, a senior editor of *Parade*, is the author of *The Book of Classical Music Lists* (Penguin).





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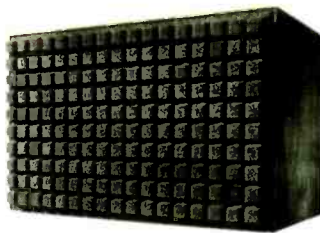
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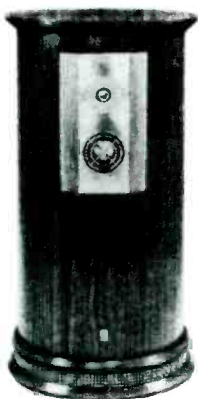
JBL's L100 speaker, 1974



## 30 Years Ago

Big Brother Is Watching: In June 1964, Editor Furman Hebb noted a ballot elsewhere in the issue for readers to rate the audio quality of their FM stations. "Stations that receive poor ratings," he added ominously, "will be pointed out for all to see."

New products this month included the Empire Grenadier speaker system, with a mass-loaded, floating-suspension



The Empire Grenadier, 1964

woofer and a frequency range of 30 to 20,000 cps [Hz], and the James B. Lansing SG520 Graphic Controller, a transistor stereo control center (preamp) for use with a power amplifier. In test reports, Julian Hirsch examined the Knight KN-265

AM/FM tuner ("Stereo separation, although not too impressive when plotted on a curve, was satisfactory to the ear") and the Electro-Voice E-V Two speaker system with a 12-inch acoustic-suspension woofer ("a very smooth and musical reproducer").

In "Stereo Amplifiers: A Guide for Beginners," Hans Fintel divided the 161 amps (by his count) then on the market into five categories based on price and quality. He concluded, "If you are still not satisfied with the equipment choices available . . . buy yourself some concert tickets."



## 20 Years Ago

Those Were the Days: Contributor Sheila Keats weighed in with the twenty-first installment of STEREO REVIEW's "American Composers" series, a ten-page appreciation of the symphonist William Schuman.

Big Star: cult faves in 1974



Among the new products were the Transcriptors "Vestigal" tonearm, which had a vertical pivot near the phono cartridge to reduce effective tonearm mass (\$100), the Audio Dynamics WDDS-12 multidirectional speaker system (\$350), and the Dokorder MK-50 cassette deck with Dolby B (\$249.95). Julian Hirsch tested the JBL L100 speaker system ("an extraordinarily fine speaker for home hi-fi service") and Pioneer's RT-1020L open-reel tape deck ("It operated with impressive smoothness and silence").

In Best of the Month, Eric Salzman raved over a disc of Debussy piano duets by Alfons and Aloys Kontarsky on Deutsche Grammophon ("I cannot imagine anything better realized, either musically or technically"), and Steve Simels endorsed "Radio City," the second album by once-and-future cult faves Big Star ("I'm beginning to think the incredibly exaggerated claims made for them have a basis in fact"). In other reviews, Noel Coppage had reservations about "Wild Tales" by Graham Nash ("I've heard wilder tales from the parson's wife"). Richard Freed was bowled over by a budget Musical Heritage Society recording of Bach's B Minor Mass conducted by Michael Corboz ("belongs at the head of the list regardless of price"). And the perennially put-upon Peter Reilly, confronting the Carpenters' "The Singles: 1969-1973," remarked that the group "barges through the speakers

like a pair of unwelcome Rotarian conventioners."

Cleanliness Is Next to Noiselessness: In "Editorially Speaking," William Anderson advised readers to "Have your stylus checked, like your teeth, at least once a year."



## 10 Years Ago

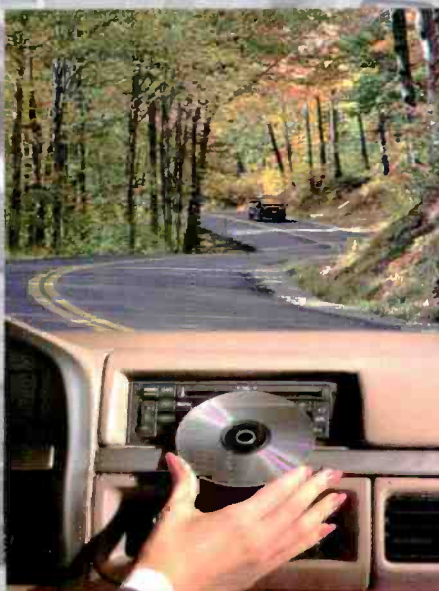
We noted the introduction of ADC's LT-32 linear-tracking turntable, with a budget price of \$99.95 including cartridge, and Speakerlab's Bass Hose, a trunk-mounted car subwoofer that looked like a giant Slinky. Craig Stark put Pioneer's three-head CT-A9 cassette deck through its paces, concluding his test report by saying, "In terms of sonic performance, we found [it] as capable as any cassette deck we have tested."

The Road to Damascus: In his special test report on the Mark Levinson ML-3 power amp—which had only one movable part (the power switch) and a price tag of \$5,400—an unusually ebullient Julian Hirsch declared, "I've tested quite a few power amplifiers in my day . . . but the measured and audible performance of the ML-3 has almost made me a convert to the high end!"

—Steve Simels



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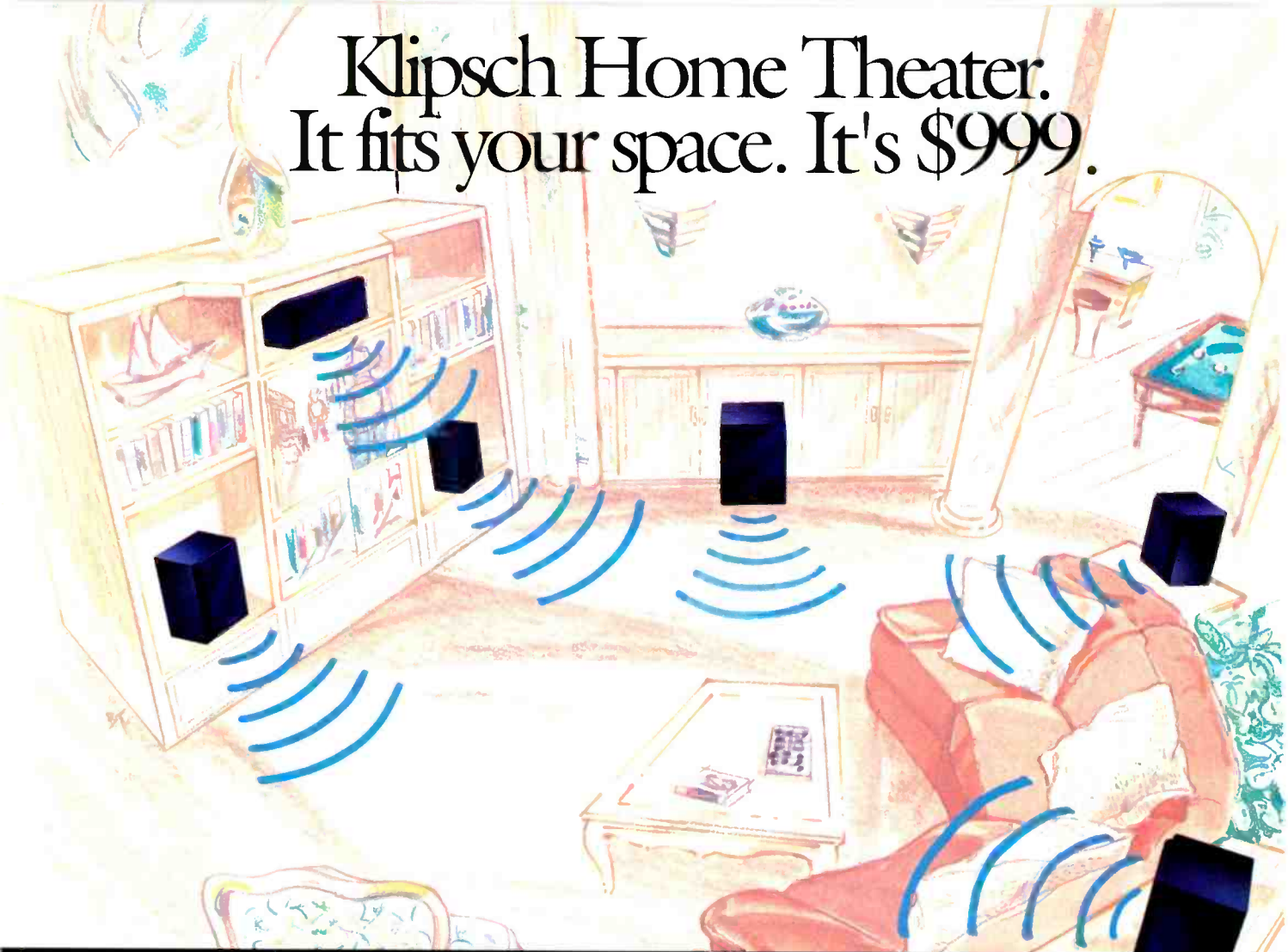
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