

Stereo Review®

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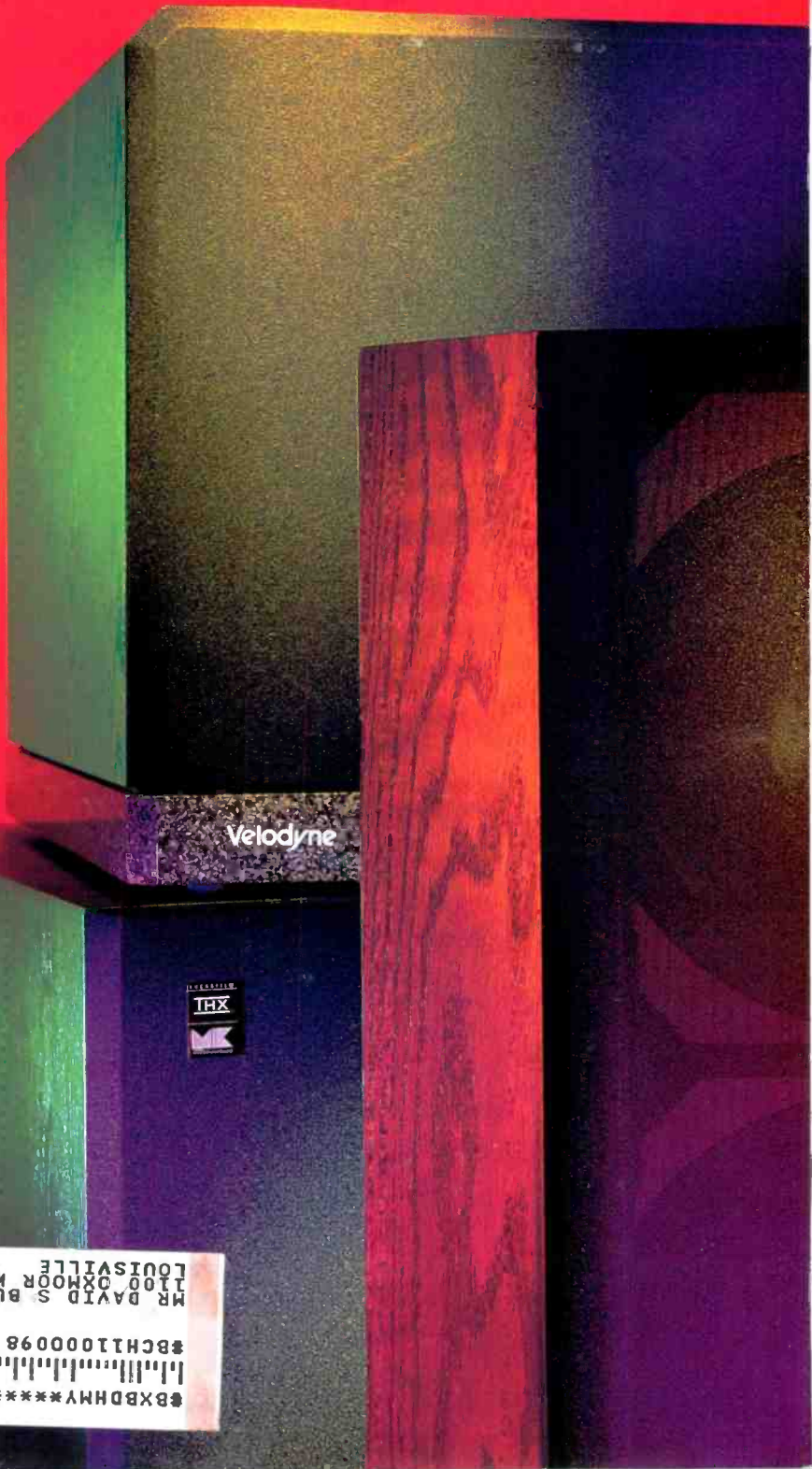
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Stereo Review
35
35TH ANNIVERSARY



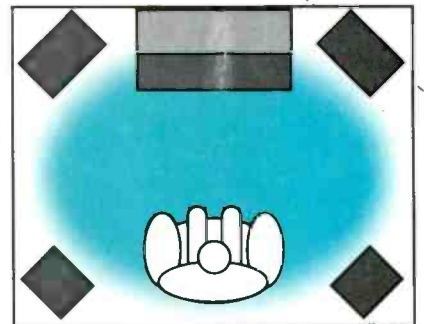
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an GTP-600: one improvement.



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theater you can build an addition to your home that you can feel as well as see and hear. Pick up the right tools for the job at your local Adcom dealer today. You'll realize that our state-of-the-art components hit the nail on the head every time.



With the GTP-600's delay modes the rear channels move the walls back, simulating the effect of a much larger area.

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connections provide a high definition signal path for maximum video quality. And with features like Adcom's exclusive Cinema Surround circuitry and Dolby Pro Logic® decoding, the GTP-600 brings cutting edge home theater technology to your fingertips.

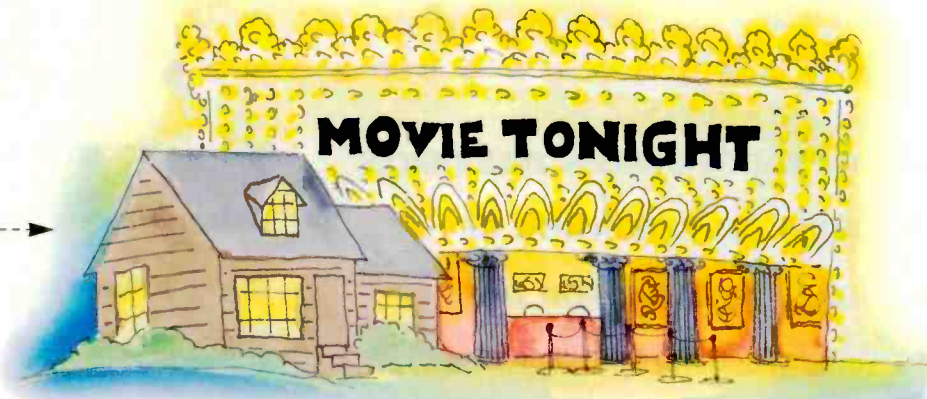
Logical control groupings and pre-programmed DSP (Digital Signal Processing) modes allow easy, precise adjustments for a variety of custom-tailored, psycho-acoustically



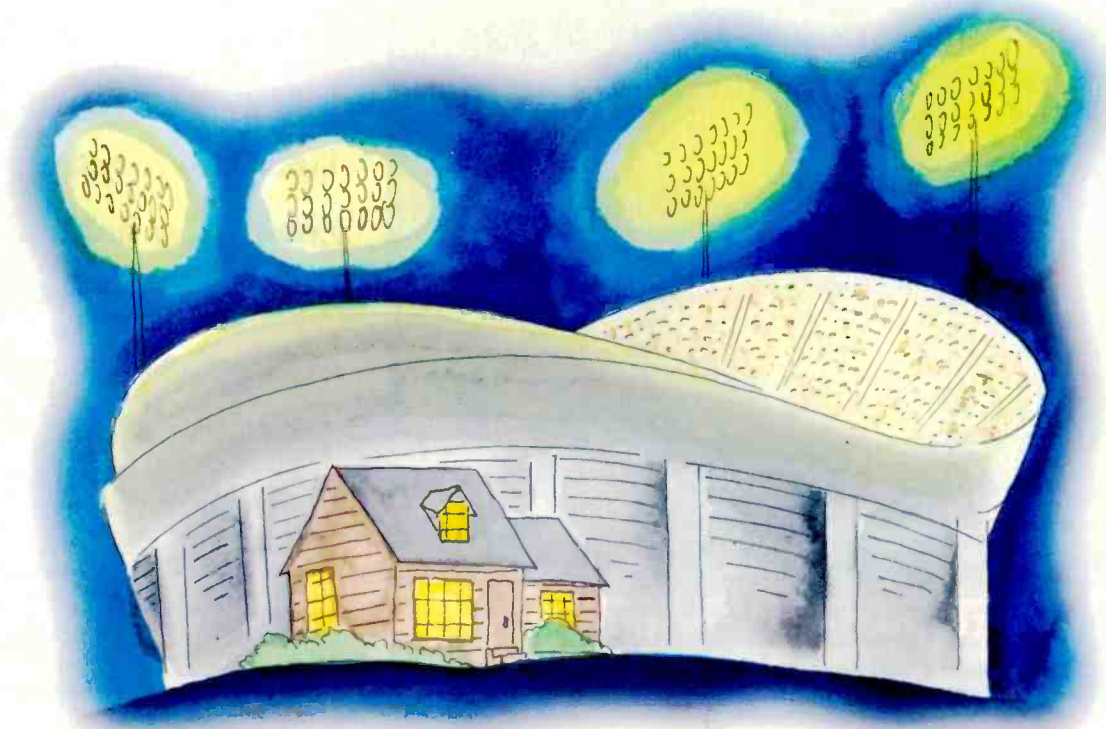
The GTP-600 keeps you in control of the action with an easy-to-use learning remote.



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WITHOUT LEAVING YOUR
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Cover

The advent of home theater has triggered an explosion of stand-alone subwoofers like the Velodyne Servo F-1500, M&K MX-5000THX, and Infinity SSW-210 shown here. See page 75 for more big-bass options.

Photograph by Dan Wagner

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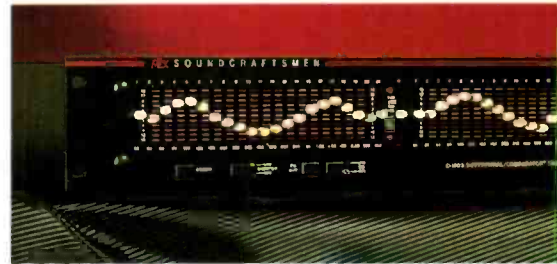
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8:37 P.M. Supper is done and the kids are finally in bed. You don't have to think about the office for another 12 hours and counting—welcome to quality time.

Living in America today means making the most of the quality time you get. That means taking the time to enjoy your favorite things—like music. KLH has been in the business of making music sound better for 35 years. Today, we combine the traditions of our founders within a framework of contemporary sophistication, to design state-of-the-art speakers. Enter the Premier Series™. We've paid attention to every detail, from the computer designed crossovers to the gold plated binding posts for your speaker wire, they're designed to make the most of your music.

Models 61 and 81:

Proof that you don't need big speakers to get big sound. These mini-monitors have been engineered for smooth frequency response, well-behaved off-axis performance and superior dynamic fidelity. The woofers are constructed using heavy-duty polymer fiber cones with 1.5-inch high-temperature voice coils and a 20 oz. barium ferrite magnet in the 61 and a 25 oz. magnet in the 81. The computer-optimized cross-overs incorporate large cross-section EI core inductors for minimum distortion at high volumes. The 1-inch dome tweeters utilize German made diaphragms, Kapton voice coil formers and ferrofluid cooling for exceptional clarity and high power handling.

Models 62T and 82T:

These elegant tower speakers were designed for the audio purist, featuring dual 6.5-inch polypropylene cone woofers with die-cast aluminum baskets and 20 oz. barium ferrite magnets for dramatic bass extension. The 62T uses a 1-inch high-performance tweeter plus a dynamic 5.25-inch cone midrange. The flagship 82T incorporates a 1-inch European-made tweeter and a wide dispersion 3-inch dome midrange to truly cross the spectrum of sound from bass to treble. The superior richness and warmth will bring life to vocal tracks, and shimmering brightness to strings without the muddiness of a lower quality midrange. The 82T is truly the ultimate expression of KLH performance and value.

Quality



81

61



82T

62T

Even The Pros Have Nice Things To Say About the Premier Series.

Julian Hirsch of Hirsch-Houck Laboratories:

"The KLH Premier 81 speakers sounded about as good as they measured, which is to say very good indeed. Their output was as smooth and extended as that of many speakers selling for several times their modest price, with only a slight upper-bass warmth to distinguish them from some speakers we have tested that cost in the range of \$1,300 to \$1,500 a pair."

Robert Long of TestBench:

"If there was one quality that consistently impressed me about the 81 over the many hours of listening evaluations, it was the solidity and musicality of the deep bass. ...If any other model in this [price] range actually produces more satisfying sound than the KLH Premier 81 did in my listening room, I have yet to hear it."

Time.



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	Model 61	Model 81	Model 62T	Model 82T
Woofer	6-1/2"	8"	Dual 7"	Dual 7"
Midrange	n/a	n/a	5-1/4" Cone	3" Dome
Tweeter	1" Dome	1" Dome	1" Dome	1" Dome
Tuned Port	Yes	Yes	Yes	Yes
Impedance	6 Ohm	8 Ohm	6 Ohm	6 Ohm
Sensitivity	86dB	87dB	87dB	87dB
Crossover Frequency	1600Hz	1300Hz	200Hz 800Hz 3000Hz	200Hz 800Hz 3000Hz
Amplifier Power*	Min. 5W Max. 130W	5W 130W	25W 250W	25W 250W
Frequency Response	40Hz 20kHz	30Hz 20kHz	35Hz 20kHz	35Hz 20kHz
Height	13-3/8"	16-1/2"	38"	38"
Width	8-3/4"	10-3/8"	9"	9"
Depth	9-1/4"	11-1/4"	11-1/4"	11-1/4"
Item Number for Ordering	Oak: B-6267-365832 Black: B-6267-365839	Oak: B-6267-365853 Black: B-6267-365846	Oak: B-6267-365888 Black: B-6267-365874	Oak: B-6267-365741 Black: B-6267-365433
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*Based on volume set below point of audible distortion.

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solos. On that note, Sensurround speakers are well-suited to music.



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houses. Now we can bring it



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(pictured here) and 7-piece system for projection

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LETTERS

Deteriorating Tape

I was intrigued by Ralph Hodges's "The High End" column in September, about problems in playing back early 1980's Advent cassettes. I have never dealt with those tapes, but I know that from 1980 through 1983 CBS Records [Columbia, Epic, etc.] used a tape stock for most of its cassettes—and those it duplicated for RCA, Boardwalk, MCA, and a few other labels—that has deteriorated very badly. When those cassettes are played now, they exhibit a screeching howl that makes them unlistenable. Tapes made before and after that period that I've auditioned still seem to play all right, as do cassettes from other labels made in that period.

BILL SCHUH
The Tape Place/The CD Place
Scottsdale, AZ

There may be hope for some of the early Advent prerecorded cassettes. I recently listened to my Advent F1009 cassette of the Mahler Third with my best headphones, and the sound was very acceptable. I could hear faint hiss but no sign of pre-echoes from print-through. I may be a little more tolerant of slight background noise than some younger people, but I suggest listening to old tapes first before throwing them out.

BILL PAINTER
Mount Laurel, NJ

How Much for THX?

For the past few months I have been researching products to upgrade my system to Home THX. The add-on THX processors from Lexicon, Fosgate, Technics, and Kenwood are all THX-certified and contain the same THX circuit board. I have become confused about pricing. While they all sound great, how can the Lexicon sell for \$3,000, the Fosgate and Technics for \$2,000, and the Kenwood for \$1,000? Don't all THX-certified products have to meet the same tough standard of performance?

RALPH NILSSEN
Maple Valley, WA

Home THX products have to provide certain features and meet certain performance specifications, but manufacturers have considerable latitude in how they achieve those requirements and in what additional features and performance enhancements they provide. (There is no universal THX circuit board that everyone uses, for example.) Such differences can affect pricing, as can a manufacturer's basic cost of doing business or its distribution network.

Subwoofers

With a powered subwoofer, how much power should be purchased? I enjoy listening to music in a large room with the equipment driven at 90 percent from time to

time. Do I need 250 watts for a subwoofer, or is 150 watts plenty?

GREG OPOLKA
Macon, GA

As with any other combination of loudspeaker and amplifier, what you really want to know is how loud it can play. Normally you could determine that (approximately, at least) from the loudspeaker's sensitivity and the amplifier's maximum power into the speaker's nominal impedance. Specifications for powered loudspeakers often indicate the power of the built-in amplifier but seldom the sensitivity of the speaker itself. So what you need to find out is the combo's maximum acoustic output, normally given in decibels (dB) of sound-pressure level (SPL) at 1 meter from the speaker. The amplifier power rating alone is useless.

Tattoo Who?

I would like to point out one slight error in Parke Puterbaugh's October review of the new Porno for Pyros album. He said that Porno for Pyros "is the Van Halen of the alternative-music scene: fronted by an obnoxious, posturing nincompoop; self-involved, flippant, and tattooed, with a perpetual smirk . . ." Please note that neither of the nincompoops presently or formerly fronting Van Halen has a tattoo.

SUSAN TUDOR
Montgomery, AL

Surround EQ

David Ranada's "Using Dolby Pro Logic" in October [part of "Three \$500 A/V Receivers"] was enjoyable and very informative. I do have a question, though: If equalizers shouldn't be used in a Pro Logic system, why do Home THX systems have them, and are they really necessary? MICHAEL KALLOK
Levittown, PA

How can I incorporate an equalizer into my home theater system without affecting the surround sound?

DERIC CHRISTENSEN
Mt. View, CA

You can use equalization in a surround system so long as it is applied to the signal after decoding rather than ahead of it, and that is the approach taken in Home THX systems. But in most cases that means you need at least three equalizer channels (for the left, center, and right front speakers) and possibly more. You also need access to the decoder outputs and power-amplifier inputs, which you may not have with an A/V receiver or integrated amplifier. The equalization built into Home THX processors is designed primarily to correct the excessive brightness that occurs when a soundtrack mixed for playback in a large space, such as a movie theater, is heard in a much smaller space,

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such as a typical living room or den. (This correction is often desirable, but whether it's absolutely necessary is a judgment call that you would have to make for yourself.) Outboard equalizers may be used in addition to improve the overall response of the loudspeakers in the listening room, but that is not a Home THX requirement.

If you just want to use an equalizer for ordinary stereo listening, with no surround processing, you can put it into a tape-monitor loop, where it can be easily switched in and out of the system. Just make sure it's bypassed when the surround decoder is engaged.

DSP on a PC

Is there any software for IBM-compatible PC's that can be used to manipulate digital signals from a CD, DCC, MD, etc.? I have two sound cards with 44.1-kHz sampling rates (CD quality) that have the capability of sampling recorded music, applying special effects, etc. I'd like to edit an incoming digital signal and output the result to a tape or MD. Any suggestions?

D. J. BENDER
Liverpool, NY

Technical Editor David Ranada replies: Any "wave editor" program designed to work with Microsoft Windows .WAV files will be able to do basic sound-editing tasks. Some also allow equalization, reverb, and other processing. There are very few affordable IBM-type sound

boards that incorporate digital input/output facilities. I know only of the Card D from Digital Audio Labs in Minneapolis.

Time Delay

I was very disappointed to see the October "Time Delay" quote Noel Coppage's comparison of his harmonica-playing ability with that of Steppenwolf's John Kay—the only negative comment in an otherwise positive review of Kay's second solo album, "My Sportin' Life." I was pleased, though, that you recalled the recording and printed a picture of Kay from 1973. Truly a rock legend, he is still touring and recording.

BILL WEEKS
Tulsa, OK

Pie Slices

From September "Bulletin": "... the EIA reported that combined sales of consumer home and car audio products will top \$10 billion for the first time this year, giving audio a solid 25-percent chunk of the domestic consumer electronics pie . . ."

From October "Signals": "... factory sales of separate audio-only components are expected to slip to \$1.5 billion this year, down from \$1.9 billion in 1990."

These reports seem to be completely at odds with each other. Would you please explain?

KEN MASSEY
Indianapolis, IN

The EIA sales figure in "Bulletin" combined all audio and audio/video products, including portables, compact systems, and rack systems. The figure cited in "Signals" referred only to full-size, separate, home audio components.

Corrections

Reader Yat Minh Leung of Charlestown, MA, pointed out the photo of the \$4,500 system in August's "Dealer's Choice" mistakenly shows a Pioneer CLD-D502 combi-player, not the Elite CLD-52 combi-player described in the article. The units look the same, but the CLD-D502 (about \$200 cheaper) differs internally.

November's "Digital on the Air" incorrectly identified the digital tape format used by Sony's Scoopman recorder as DMR. It is called NT, for non-tracking.

Don Balogh of Green Village, NJ, caught our incorrect attribution, in "Track Records" on page 102 in October, of Rod Stewart's performance of the Yardbirds' *The Shapes of Things* to the "Beck-Ola" album. He sang it on the Jeff Beck Group's first album, "Truth." □

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.



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crossover. The satellite and center speakers each have two 3½-inch drivers and one ½-inch tweeter in a simulated-stone cabinet. Price: \$1,099. Polk Audio, Dept. SR, 5601 Metro Dr., Baltimore, MD 21215.



▼ ROTEL

Rotel's RSP-960 surround processor/preamplifier features a Dolby Pro Logic decoder, three synthesized-ambience modes for nonencoded programs, and inputs for two audio and three A/V sources (composite- and S-video). It has a subwoofer output

with a dedicated level control, an adjustable 80/120-Hz low-pass crossover, and a Bass EQ switch that provides an 8-dB boost. Price: \$600. Rotel, Dept. SR, P.O. Box 8, North Reading, MA 01864-0008.

• Circle 121 on reader service card



▲ KOSS

Koss's HB-500 infrared wireless headphone system is said to have an operating range of up to 500 square feet. Power for the headphones is supplied by two AA batteries in one of the earcups. Price: \$100. Koss, Dept SR, 4129 N. Port Washington Ave., Milwaukee, WI 53212.

• Circle 120 on reader service card



▲ BOSE

The Wave Radio from Bose is no ordinary clock radio. The 14 x 4½ x 8-inch dual-alarm clock radio incorporates a 12-watt amplifier and two 2¼-inch drivers, one of which is loaded into a 34-inch extend bass output down to about 70 Hz. Maximum output is said to

exceed 90 dB. Features include a line-level input, a credit-card-size remote control, twelve AM/FM presets, scan and mute buttons, ramp-up volume, and a back-up battery. Available factory-direct for \$349. Bose, Dept. SR, The Mountain, Framingham, MA 01701-9168.

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Talking Heads: Speaking In Tongues (Sire) 01421

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NEW PRODUCTS



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Conrad-Johnson's PF2 preamplifier features a JFET circuit design that is said to achieve low distortion without the use of negative feedback. It has five line-level inputs, including

two tape-monitor loops.

Price: \$1,395; \$1,795 with the PF2PH phono stage. Conrad-Johnson, Dept. SR, 2733 Merrilee Dr., Fairfax, VA 22031.

• Circle 122 on reader service card

▶ KLH

KLH's Premier 82T speaker combines two 6½-inch woofers, a 3-inch dome midrange, and a 1-inch tweeter in a 38-inch-tall cabinet finished in oak or black vinyl. Response is rated down to 29 Hz (-3 dB). An optional equalizer (shown) is said to optimize performance for different room placements.

Price: \$1,000 a pair; \$1,250 with EQ. KLH, Dept. SR, 11131 Dora St., Sun Valley, CA 91352.

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◀ PIONEER

Pioneer's 10⅞ x 3⅜ x 6½-inch CDX-M12 twelve-disc car CD changer is designed to fit under a seat or elsewhere in the interior of many vehicles. Control options include the CD-FM7 FM modulator/remote-control kit (\$200) or any Pioneer head unit. Price: \$500. Pioneer, Dept. SR, P.O. Box 1720, Long Beach, CA 90810-1720.

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▶ PARADIGM

Paradigm's 10-inch-tall Atom speaker (\$159 a pair) is a two-way system with a rated frequency response of 60 Hz to 20 kHz ± 2 dB. The companion SB-100 subwoofer (\$239), 17 x 16¼ x 19 inches, has a rated frequency response of 36 Hz to 100 Hz ± 2 dB and a power-handling range of 15 to 200 watts. The Atom is available finished in oak, white, or black-ash vinyl, the SB-100 only in black-ash vinyl.

Distributed by AudioStream, Dept. SR, P.O. Box 2410, Niagara Falls, NY 14302.

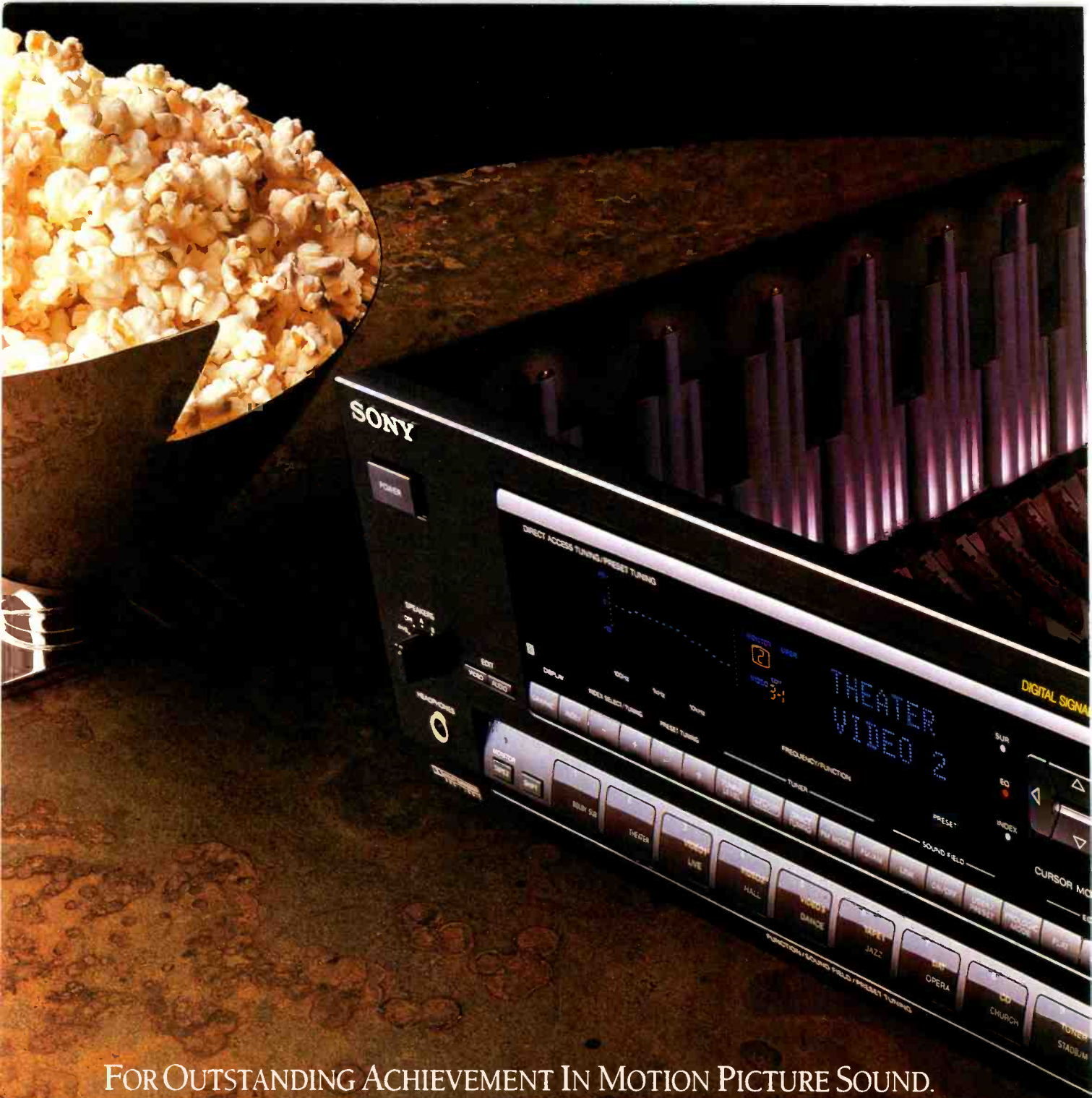
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▶ RDL ACOUSTICS

The RDL B-1 speaker is designed to perform optimally either on a bookshelf or on a stand placed away from the wall. It teams an 8-inch woofer with a convex tweeter in a 11 x 21 x 11¼-inch cherry-veneer cabinet. Available factory-direct for \$449 a pair with a thirty-day money-back guarantee. RDL Acoustics, Dept. SR, 26 Pearl St., #15, Bellingham, MA 02019.

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TIME DELAY



35 Years Ago

In a Christmas mood in his "HiFi Soundings" column in the December 1958 issue, Music Editor David Hall pondered the contributions of music and home audio toward Peace on Earth. "Recorded music has been a powerful force working against the apartness of peoples and nations," he observed. "The music of Shostakovich and Prokofiev has achieved international popularity not because of, but *in spite of* differing ideologies."

Among the new products noted this month were Crown's Stereo-Matic tape player, which could handle 14-inch reels (\$617), Garrard's 4HF four-speed deluxe transcription tonearm-and-



Frankie (*Mule Train*) Laine, 1958

turntable combo (\$59.50), and Fisher's 101-R stereo AM/FM tuner, with fifteen tubes and two germanium diodes (\$229.50). In *Equipment Reports*, the editors withheld their findings on the Madison Fielding MX-100 stereo-compatible multiplex adaptor because the FCC had not yet decided which stereo-FM broadcast system to authorize.

Reviewing "Torchin," a ballad album by singer Frankie (*Mule Train*) Laine, jazz critic Nat Hentoff noted approvingly that it did not contain "oppressive mule-whipping."

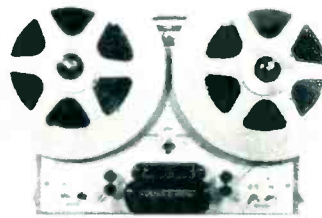
Stereo Review

A GUIDE TO TUNER (AND RECEIVER) BUYING
BASIC OPERA LIBRARY • THE MIGHTY MOUTH
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20 Years Ago

In *Best of the Month*, George Jellinek hailed the first-ever complete recording of Rossini's *William Tell* on Angel ("I expect to enjoy its many beauties for a long time to come"), and Edward Jablonski waxed enthusiastic over "Bobby Short Is K-ra-zy for Gershwin" ("I have a four-letter word to describe my reaction . . . R-A-V-E"). Elsewhere in the review sections, Noel Coppage was charmed by Ian Matthews's "Valley Hi" ("Matthews may have scored more points this month than my beloved New York Knicks"). Chris Albertson professed bafflement at Miles Davis's "In Concert at Philharmonic Hall, New York" ("I think



Crown's Stereo-Matic, 1958

Miles is putting us all on"). Paul Kresh was not quite P.C. in his review of Leonard Bernstein's recordings of the four Brahms symphonies ("I hear in them the sighs of ladies attending matinees of the New York Philharmonic"). And Peter Reilly, tackling Melissa Manchester's "Home to Myself," described it as "about as musical as the clinking of two plastic glasses."

New products this month included the Akai GX-285 open-reel tape deck with Dolby noise reduction (\$750) and the Micro/Acoustics QDC-1 phono cartridge for CD-4 quadrasonic discs. Meanwhile, in test reports Julian Hirsch examined the H. H. Scott 490 integrated stereo amplifier ("The listening qualities left nothing to be desired") and the Hungarian-made Videotone D 132-E speaker system. "If these speakers are indicative of the state of the audio art in Hungary," Hirsch declared, "we look forward to other products from that country."

And now a word from the cultural elite: In his "Going on Record" column, Music Editor James Goodfriend took issue with the *raison d'être* of "The Basic Repertoire," one of the magazine's long-running features. "To search the world for the ideal recording of *Scheherazade*," he ventured, "while never being aware of the *Lagrima d'Amante* of Monteverdi strikes me as the height of absurdity."

10 Years Ago

Letters to the Editor: Readers of Laurence Greenhill's August article comparing the sonic merits of Monster Cable and zip cord got their last licks

in as the correspondence was declared officially closed. The final word came from Jeffrey Hukkanen of Whittier, California, who wrote, "I'm

Stereo Review

HOW TO CHOOSE A CARTRIDGE

Understanding Stylus Shapes

The Sound of Music on Video

Four Grand Operas

Equipment to Watch

• Sample 900 75000 Series 40

• Winton Cartridge Recorder

• Yamaha PSR 100 100000

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H. H. Scott 490 amplifier, 1973

and stereo TV's. E. Brad Meyer correctly predicted that "If all goes well, you might receive your first stereo TV broadcast in late 1984 or early '85."

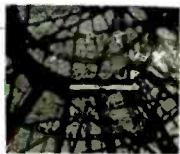
A good tuna, but not a great tuna: After listening to Asia's "Alpha," critic Mark Peel declared, "It needs a review about as much as a can of tunafish needs a review."

—Steve Simels

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Pat Metheny—Secret Story (Geffen) 444•422

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Jay McShann—Blues From Kansas City (Decca Jazz/GRP) 466•417

Gerry Mulligan—California Concerts, Vol. 2 (Blue Note) 466•409

Hubert Laws—Crying Song (CTI) 466•367

Bob Berg—Enter The Spirit (Stretch Records) 461•772

New York Voices—What's Inside (GRP) 460•907

Eric Marienthal—One Touch (GRP) 460•899



George Howard—When Summer Comes (GRP) 465•534

Dave Brubeck—Trio Brubeck (Musicmasters Jazz) 460•279

A.J. Croce (Private Music) 460•253

Kim Pensyl—Eyes Of Wonder (GRP) 460•113

Phillip Bent—The Pressure (GRP) 459•925

Lyle Mays—Fictionary (Geffen) 459•891

John Lucien—Mother Nature's Son (Mercury) 459•685

Jean Luc Ponty—No Absolute Time (Atlantic) 464•297

The Rippingtons—Live In L.A. (GRP) 463•471

Guru—Jazzmatazz (Chrysalis) 461•319

Art Porter—Straight To The Point (Verve Forecast) 461•095

Grant Geissman—Rustic Technology (Blumoon) 459•040

The Bunk Project—With Woody Allen (Musicmasters Jazz) 458•794

Joshua Redman—(Warner Bros.) 458•778

Mark Whitfield (Warner Bros.) 458•752

Arturo Sandoval—Dreams Come True (GRP) 458•331

Michel Petrucciani—Promenade With Duke (Blue Note) 458•125

Hubert Laws—My Time Will Come (Musicmasters) 458•026

Acoustic Alchemy—The New Edge (GRP) 457•481

Tower Of Power—T.O.P. (Epic) 456•616

Nancy Wilson—Nancy Wilson/Cannonball Adderly (Capitol) 455•295

John Scofield—What We Do (Blue Note) 454•942

Lou Rawls—Portrait Of The Blues (Manhattan) 454•934

Incognito—Tribes, Vibes & Scribes (Talkin Loud/Verve) 454•918

Abbey Lincoln—Devil's Got Your Tongue (Verve) 454•900

Earl Klugh Trio—Volume Two: Sounds And Visions (Warner Bros.) 454•488

Yellowjackets—Like A River (GRP) 454•165

Kirk Whalum—Cache (Columbia) 453•928



Miles Davis & Quincy Jones—Live At Montreux (Warner Bros.) 463•554

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Best Of Count Basie (Roulette Jazz) 435•990

The Divine Sarah Vaughan—The Columbia Years 1949-53 (Columbia) 374•280/394•288

The Modern Jazz Quartet (Savoy Jazz) 456•202

Stan Getz—Opus De Bop (Savoy Jazz) 456•186

Charlie Parker—The Genius Of Charlie Parker (Savoy Jazz) 456•160

Compact Jazz—Best of the jazz vocalists. (Verve) 434•456

The Best Of Chet Baker (Pacific Jazz) 433•680

Dinah Washington Sings The Blues—Compact Jazz (Mercury) 429•613

Erroll Garner—Body And Soul (Columbia Jazz Masterpieces) 427•955

Ella Fitzgerald—The Cole Porter Songbook, Vol 1 (Polydor) 426•692

Dizzy Gillespie—The Champ (Savoy Jazz) 456•210

John Coltrane—Giant Steps (Atlantic) 371•591

Billie Holiday—From The Original Decca Masters (MCA) 354•985

Duke Ellington—Ellington At Newport (CL Jazz Masterpieces) 354•662



Ray Charles And Betty Carter (DCC Compact Classics) 376•293

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Jimmy Scott—All The Way (Sire) 450•734

Dr. John—Goin' Back To New Orleans (Warner Bros.) 450•718

David Benoit—Letter To Evan (GRP) 450•288

Maceo Parker—Life On Planet Groove (Verve) 449•991

Lincoln Center Jazz Orchestra—Portraits By Ellington (Columbia) 449•181

Jeff Lorber—Worth Waiting For (Verve) 458•299

Michael Franks—Dragonfly Summer (Reprise) 457•028

The Brecker Brothers—Return Of The Brecker Brothers (GRP) 448•191

"Jelly's Last Jam"—Original Broadway Cast (Mercury) 447•748

Larry Carlton—Kid Gloves (GRP) 445•569

Tony Bennett—Perfectly Frank (Columbia) 445•486

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Najee—Just An Illusion (EMI) 442•251

GRP All-Star Big Band (GRP) 440•503

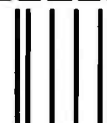
Al Jarreau—Heaven And Earth (Reprise) 439•240

Bob James & Earl Klugh—Cool (Warner Bros.) 439•232

Shirley Horn—Here's To Life (Verve) 439•190

David Sanborn—Uplfront (Elektra) 438•994

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- Crusaders**—*Healing The Wounds* (GRP) 419-952
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- Joe Sample**—*Invitation* (Warner Bros.) 455-905
- Milt Jackson**—*Reverence* (Reprise/Qwest) 460-238

- Joe Henderson**—*So Near, So Far* (Verve) 455-535
- Stanley Clarke**—*East River Drive* (Epic) 449-777
- Kenny G**—*Breathless* (Arista) 448-142

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- Bob Dylan**—*30th Anniversary Concert* (Columbia) 465-187/395-186
- Toni Braxton**—*(LaFace)* 464-362
- Babyface**—*For The Cool In You* (Epic) 464-222
- Kris Kross**—*Da Bomb* (Ruffhouse/Columbia) 463-703
- Billy Joel**—*River Of Dreams* (Columbia) 463-695
- James Taylor**—*Live* (Columbia) 463-687/393-686
- Cypress Hill**—*Black Sunday* (Ruffhouse/Columbia) 463-596
- Donald Fagen**—*Kamakiriad* (Reprise) 465-463
- "Sleepless In Seattle"*—*Orig. Sndtrk.* (Epic Soundtrax) 458-430
- Aerosmith**—*Get A Grip* (Geffen) 458-075
- String Ten**—*Summoner's Tales* (A&M) 454-561
- "The Bodyguard"*—*Original Soundtrack* (Arista) 448-159
- Blind Melon** (Capitol) 447-995

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Joey DeFrancesco—*Live At The Five Spot* (Columbia) 461-251



Horace Silver Quartet—*It's Got To Be Funky* (Columbia) 460-709

Basia—*London Warsaw New York* (Epic) 401-752

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Weather Report—*Heavy Weather* (Columbia) 273-557

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SIGNALS

BY KEN C. POHLMANN

As Good as New

WASHINGTON, D.C. (Dec. 1)—In a surprise ruling yesterday, the Supreme Court outlawed the resale of used cars. In a 6-3 vote, the justices overturned the right of anyone who owns a car to resell that vehicle to a car dealer or another person. Although the decision addresses only the resale of used cars, lower courts are expected to apply it to used furniture, tools, computers, books—virtually all manufactured goods.

Relax. No such ruling has actually been handed down—yet. But the issue of reselling used goods—in this case CD's—is the source of a raging debate in the music industry. Like most things in the material world, a CD can be destroyed. But unlike an LP or a tape, it is extremely durable. If a CD looks clean and scratch-free, you're virtually assured that the music recording is in good shape. Given that simple fact, it's easy to see why a thriving market for used CD's has developed over the past decade. First it was the small, independent shops with a few racks of used discs in the corner. Now some record-store chains have embraced the idea. And the record labels aren't happy about it.

Defending the practice of selling used CD's, record-store owners argue that new CD's are too expensive for many people. Besides limiting purchases in general, high prices also discourage shoppers from exploring new repertoire, which hurts the sale of new music. The availability of used CD's lets consumers explore unfamiliar music, they say—possibly leading to overall higher sales. Similarly, they argue that offering used CD's may actually stimulate the sales of new CD's by bringing people into the store. Warehouse Entertainment, a chain with more than 330 stores in ten states, has been known to offer \$3 off any new CD when you bring in a used CD.

Noting that major record labels routinely sell CD's through their own record clubs at heavily discounted prices, record-store owners contend

that the labels oppose the sale of used CD's because it loosens their stranglehold on the market for low-price CD's. They also point to the law: The Copyright Act contains a first-sale doctrine that says mechanical royalties must be paid only the *first time* an album is sold; after that, the record is freely transferable without additional royalties. Finally, record-store owners argue that it is simply a person's right to resell his or her own property.

The record labels view things differently. They see the used-CD trade as a threat to the future of the music business. They say the cost of new CD's is entirely appropriate considering the value they offer. They also point to the law prohibiting CD rentals and argue that buying and selling used CD's is merely rental in disguise. The used-CD market, they maintain, also encourages employees and customers to steal CD's so they can be fenced at stores that deal in used discs. They also charge that some record stores buy used CD's for a few dollars and send them back to the distributor as "returned merchandise" for a \$10 credit. To curtail that practice, at least one major distributor has stopped ac-

cepting returned CD's that have been opened, instead giving a 1 percent credit toward future purchases. Record-store owners counter that such policies force them into the used-CD business as the only way to recoup losses on returned discs.

Moreover, elimination of the long box has cut packaging costs by 50 cents or more, yet some labels recently *raised* CD prices. The record companies persuaded Congress to impose a consumer tariff on all digital recorders and media, and some music executives are now calling for similar tariffs on all analog recorders and media.

Weighing the issues, the record labels blinked—rescinding their embargo on co-op advertising dollars and cooling their used-CD rhetoric. The record stores won this skirmish, but bigger battles lie ahead. □

Record stores retaliated against the embargo of advertising dollars. Some eliminated marginal titles and ordered fewer major titles. Others simply ignored the embargo, calculating that the profits from used CD's would far outweigh additional sales derived from co-op advertising. Warehouse Entertainment and the Independent Music Retailers Association even filed separate lawsuits against the four distributors, contending that the move to stifle used-CD sales violates antitrust laws. Finally, the Federal Trade Commission opened an investigation into the record labels' used-CD policies and, according to insiders, their entire CD pricing structure.

A court battle would certainly not help the image of the record companies. They're far from hurting financially: Music sales totaled \$9 billion in 1992, up from \$7.8 billion in 1991. And it's common knowledge that it costs less than a buck to manufacture a disc, which is sold to retailers for about \$10.

First it was the small, independent shops with racks of used CD's in the corner.

Now some record-store chains have embraced the idea.

And the record labels aren't happy about it.



AUDIO Q & A

BY IAN G. MASTERS

Surround Improvisation

Q *I need to increase the power to my surround speakers to about 50 watts each, but my processor/amplifier does not provide line-level outputs for the surround channel. Is there any way I can increase power to the surrounds without having to replace my present processor?*

LEE CHUN LIT
Singapore

A Try the following only if you are sure (ask the manufacturer if necessary) that the surround-speaker outputs of your processor/amplifier are not "bridged." Disconnect your surround speakers and connect a pair of fairly hefty resistors (rated at 5 or 10 watts, say) with a resistance of at least 8 ohms in their place across the amplifier's speaker outputs (that is, one resistor per output, wired between the positive and negative terminals). Then run wires from the processor/amplifier's outputs to the inputs of an external amplifier capable of producing the power you need. Ordinary speaker cable will do, with the conductor attached to the positive (red) terminal soldered to the center connector of an RCA plug and the conductor from the negative (black) terminal soldered to the plug's shield, so that you can plug it into the amplifier inputs. Then connect the external amp's outputs to the surround speakers. You may be able to use the surround-channel level control on your processor to attenuate the signal sufficiently to prevent overloading the external amplifier's inputs, although that might result in very noisy operation. If so, insert an extra level control (or pad) in the line feeding the external amplifier and balance everything for optimum level and noise performance. Once you have everything set up, you can control the system as if the built-in amplifiers in your processor were feeding the surround speakers directly. If your amp's outputs are bridged, there's little you can do that won't involve lots of custom-designed circuitry, a loss of sound quality, or both.

Considering Crosstalk

Q *My FM tuner's channel separation is rated at 70 dB at 1 kHz, while a receiver I am considering has only 44 dB at 1 kHz. How much impact does channel separation have on a system's overall sound quality? Will the second unit suffer sonically in comparison with the first?*

MARK BURBEY
St. Paul, MN

A Theoretically, the larger the channel-separation number the better. But really big numbers (which indicate low interchannel crosstalk) are important only if the channels are likely to carry unrelated material—as, for example, they might if they were mono tracks

from an open-reel tape recorder. A stereo FM signal, on the other hand, is made up of the left and right channels of a single stereo signal, and psychoacoustic research has shown that you can achieve convincing stereo imaging with as little as 20 dB of separation. The two components you mention, therefore, should sound the same, at least when it comes to separation.

Pushing Power

Q *My amplifier is rated at 225 watts a channel, but its meters sometimes register as high as 300 watts. Am I really pushing 600 watts total? And is that likely to damage my speakers, which are rated for 410 watts peak?*

JAMES FIERO
Sheffield, PA

A The amplifier rating is for a continuous signal with a stated level of distortion. From time to time, any amplifier will put out more than its rated power for very short periods of time, and yours probably does hit a total of 600 watts now and then. Almost all speakers can handle that sort of spike if it's short enough; in your case, it doesn't even come close to the peak rating, assuming it is a per-speaker rating (as they usually are). Even given the often capricious nature of speaker power-handling numbers, I doubt that you have any cause for concern. Also, few amplifier power meters are true power indicators. Most respond to voltage and are calibrated in watts on the assumption of some fixed load impedance (usually 8 ohms), so you seldom get better than an approximation of the actual power output into a loudspeaker.

Subwoofer Comparisons

Q *I am finding it difficult to choose a subwoofer because it seems to be almost impossible to listen to more than one at a time. In my travels, I didn't find a single store that had more than one set up in a particular area. Sometimes making comparisons means listening in one room to one unit and then moving to another room for the next. Any suggestions as to how I can make meaningful comparisons?*

DAN BAW
North Little Rock, AR

A Picking a subwoofer is as close as you'll get to an act of faith in audio. Even if a dealer sets up a completely fair A/B test—no easy matter given the wide variations from model to model in sensitivity, crossover points, and so forth—the fact that the two units can't be in exactly the same spot will often serve to ruin the comparison. Even if it doesn't, how a subwoofer sounds in a retailer's listening room is likely to have little

Definitive Technology[®] Authorized Dealers

AK- Holt's; Fairbanks; Pyramid; Anchorage.
AL- in Concert; Huntsville; Lika Audio; Birmingham.
AR- Laura Electronics; Little Rock.
AZ- Jerry's Audio Video; Phoenix; Tucson.
CA- Audio Concepts; Long Beach; San Gabriel; Coast Satellite TV; Alacázar; Creative Stereo; Santa Barbara; Ventura; David Rutledge Audio; Palm Springs; Henry Radio; LA; Pacific Coast A/V; Corona del Mar; Paradise; Sacramento; Performance Audio; San Francisco; Sound Co.; Escondido; San Diego; Sound Goods; Campbell, Min. View; Systems Design; Redondo Beach; Wilson A/V; Woodland Hills.
CO- Listen Up; Denver; Boulder, Colorado Springs.
CT- Al Franklin's; Hartford; Carston's A/V; Danbury; Robert's Music; New London; Sound Playground; Newington, Orange, Norwich.
DC- Suburbs; Audio Associates.
DE- Sound Studio; Dover, Newark, Wilmington.
FL- Absolute Sound; Winter Park; Audio Cit.; Ft. Lauderdale; Audio Video; Tallahassee; Audio Video Interiors; Melbourne; Invisible Audio; Pensacola; Hoyt Stereo; Jacksonville; Sensuous Sd.; Tampa; Sound Components; Coral Gables; Sound Ideas; Gainesville; Sound Insight; Ft. Pierce; Stereotypes; Daytona; Stereo World; Ft. Myers; Naples; Stuart A/V; Stuart, GA; Stereo Shop; Martinez; Stereo Video Systems; Marietta.
HI- Maui Audio Center; Kanului Classic Audio; Honolulu.
IA- Audio Logic; Des Moines; Camera Corner; Davenport; Custom A/V; Cedar Rapids; Hawkeye; Iowa City, Cedar Falls.
ID- Good Ear; Boise.
IL- United Audio Centers; Chicago & Suburbs; Cars & Stereo; Rodford; Jon's Home Center; Quincy; Stereo Studio; Palatine; Select Sound; Naperville; Sterling Elect.; Sterling.
IN- Ovation Audio; Clarksville, Indianapolis.
KS- Accent Sound; Overland Park; Advance Audio; Wichita; Audio Junction; Junction City.
KY- Ovation Audio; Lexington, Louisville.
LA- Alterman Audio; New Orleans; Metairie.
MA- Goodwina Audio; Boston; Shrewsbury; Nantucket Sound; Hyannis.
MD- Audio Assoc.; Annapolis, Laurel, Rockville; Cumberland Elec.; Cumberland; Gramophone; Balt., Ellicott City; Soundscapes; Balt.; Sound Studio; Salisbury.
ME- Cookin'; Portland.
MI- Pear's; Detroit, Troy; Classical Jazz; Holland; Front Row A/V; Flint; Future Sound; Ypsilanti; Court St. Listening Room; Midland, Saginaw.
MN- Audio Designs; Winona; Audio Perfection; Minneapolis.
MO- Independence A/V; Independence; Sd. Central; St. Louis.
NC- Audio Video Systems; Charlotte; Stereo Sound; Durham, Greensboro, Raleigh, Winston Salem; Tri City Elect.; Conover.
ND- Precision Audio; Grand Forks.
NE- Custom Electronics; Omaha, Lincoln.
NH- Cookin'; Nashua, Manchester, Newington, Salem, S. Nashua.
NJ- Sound Waves; Northfield; Sassafras; Cherry Hill; Woodbridge Stereo; W. Caldwell, W. Longbranch, Woodbridge.
NM- West Coast Sound; Albuquerque, Santa Fe.
NV- Upper Ear; Las Vegas.
NY- Audio Breakthroughs; Manhasset; Audio Dan; Lake Grove; Audio Expressions; Newburgh; Chemung Elect.; Corning, Elmira; Clark Music; Albany, Syracuse; Electro Exchange; Manhattan, Nanuet; Hart Elect.; Vestal; Innovative Audio; Brooklyn; Listening Room; Scarsdale; Rowe Camera; Rochester; Sound Mill; Mt. Kisco, Yorktown Hts.; Speaker Shop; Amherst, Buffalo.
OK- K Labs Premium Audio; Tulsa.
OH- Audio Craft; Akron, Cleveland, Mayfield Hts., Westlake; Audio Etc.; Dayton; Hart Audio; Lima; Speaker Shop; N. Lima.
OR- Bradford's HiFi; Eugene; Chelsea A/V; Portland, Beaver; Kelly's Home Ctr.; Salem; Smart Homes; Bend.
PA- GNT Stereo; Lancaster; Hart Electronics; Blakely, Kingston; Listening Post; Pittsburgh & suburbs; Sassafras; Bryn Mawr, Montgomeryville, Whitehall; Stereoland; Natrona Heights; Studio One; Erie.
RI- Eastern Audio; North Providence.
SC- Dashboard; Charleston; Upstairs Audio; Columbia.
TN- Hi Fi Buy's; Nashville; Lindsey Ward; Knoxville; Modern Music; Memphis; New Wave Elect.; Jackson; Sound Room; Johnson City.
TX- Audio Tech; Temple, Waco; Audio Video; College Station; Brock A/V; Beaumont; Bunkley's Sd. Systems; Abilene; Bjorn's; San Antonio; Don's Hi Fi; Amarillo; High Fidelity; Lubbock; Home Entertainment Dallas, Houston; Marilyn Electronics; Ft. Worth; Music by Design; Austin; Sound Towne; Texasarkana.
UT- AudioWorks; Salt Lake City; Stokes Bros.; Logan.
VA- Audio Associates; Arlington, Fairfax; Audiometrics; Roanoke; Digital Sd.; Va. Beach; Stereotypes; Charlottesville.
VT- Audio Video Authority; S. Burlington.
WA- Audio Waves; Everett; Definitive Audio; Bellevue, Seattle; DESCO Electronics; Olympia; Evergreen Audio; Silverdale; Pacific Sight & Sound; Wenatchee; Sound Mart; Spokane; Tin Ear; Kennewick.
WVA- Sound Post; Princeton.
WI- Absolute Sound & Vision; Sheboygan; Audio Emporium; Milwaukee.
Puerto Rico- Precision Audio; Rio Piedras.
Canada- Advance Electronics; Winnipeg; Audio Ark; Edmonton; Audio Ctr.; Montreal, Ottawa, Quebec City; Bay Bloor; Toronto; CORA; Quebec City; Digital Dynamics; Clearbrook B.C.; Great West Audio; London; Peak Audio; Halifax; Sound Advice; Calgary; Sound Hounds; Victoria B.C.; Sound Room; Vancouver; Sound Station; Courtenay B.C.
Mexico- Contact Grupo Volumen; Mexico City.

Definitive Technology[®]

“Bipolar Systems are as Close as We’ve Come to Finding the Holy Grail of Home Theater.”

– Video Magazine

Experience the Miracle of Bipolar Technology with Definitive’s Revolutionary BP8, 10 & 20!

“Truly Outstanding”

— Stereo Review

Experts agree that Definitive’s revolutionary bipolar BP8, BP10 and BP20 are three of the world’s finest speakers and are sonically superior to any conventional speaker regardless of cost.

These American-made, advanced technology bipolar (front and rear radiating) systems combine lush spacious soundstaging, lifelike depth-of-field, razor-sharp resolution and pinpoint 3-D imaging with powerful subwoofer-like bass (to below 20 Hz), high efficiency, wide dynamic range and easy-to-position convenience. The dramatic result is superb music and movie reproduction so real that it has been called, “a sonic miracle!”



The Ultimate Home Theater

Combine the BP8s, 10s, or 20s with our C/L/R 1000 or C1 center channel and BP2 bipolar surround speakers for the ultimate in home theater sound.

Visit your nearest Definitive dealer and experience the absolute sonic superiority of these truly extraordinary ViVA Gold Product-of-the-Year, Audio Video Grand Prix and CES Design & Engineering Award winning loudspeakers.

Definitive’s remarkable new PowerField™ 1500 250-watt powered 15" subwoofer is now available (\$995).

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100% Led.




LED ZEPPELIN

LED ZEPPELIN
The Complete Studio
Recordings
10-CD boxed set

①

A stunningly lavish set, this new 10-disc box comprises all nine Led Zeppelin studio albums (eight single albums, plus the two-record set, *Physical Graffiti*), available for the first time as digitally remastered by Jimmy Page and in their original sequence. Extensive, deluxe packaging reproducing all original LP artwork in color. Includes book with Cameron Crowe essay and rare pictures. Nine classic albums that have never sounded this good. The ultimate music gift for the holidays.



LED ZEPPELIN
Boxed Set 2
2-CD boxed set

②

This new mini-box set includes the 31 studio tracks (from the nine Led Zeppelin studio albums) not included in the original 4-disc boxed set. Digitally remastered by Jimmy Page from the original master tapes, it features the never-before-released Led Zeppelin studio track, "Baby Come On Home," plus a booklet essay by David Fricke and rare photos. On CD only. A must own for all Led Zeppelin fans.



Led Zeppelin

LED ZEPPELIN
4-CD / 4-cassette
boxed set

③

Released in the fall of 1990 and the first Led Zeppelin compilation ever, this 54 track, 4-CD boxed set has become the best selling boxed set of its kind, with more than a million copies sold to date in the U.S. alone. A perennial favorite, it is available once again for the 1993 holiday season.



More than just a whole lotta love THE ATLANTIC GROUP
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bearing on how it will perform when you get it home.

Fortunately, a subwoofer is a relatively noncritical supplement to your existing speakers, which bear the main burden of good, neutral sound. If you can make a subwoofer put out adequate bass somewhere in the hi-fi store, chances are you have one or more spots in your own listening room where it will do the same; it's just a matter of finding them. Indeed, if the crossover point is low enough and the subwoofer is amplified separately from the main speakers, you will probably be able to get it to work pretty well in a wide range of placements.

Audio-Equipped VCR's

Q For some years I have been transferring my favorite music to the hi-fi track of my VCR, which gives me 6 to 8 hours of fabulous audio on a single high-grade videocassette. I would like to upgrade my recorder, but there are few machines that have manual record-level controls—the cheapest I have seen costs \$600. Is there a less expensive solution?

CARL JOHNSON
Lake Orion, MI

A As a veteran taper, I too get very nervous when some nondefeatable circuit pre-sumes to set levels for me, although, in fairness, many automatic gain controls work remarkably well. Still, only those who are seriously into recording want to dispense with that convenient feature and run things themselves, and the electronics industry has apparently concluded that these people are willing to pay for the privilege. The AFM (hi-fi) recording on today's VCR's is not significantly superior to that on older machines, however, so you might save some money either by buying a used machine or by having your existing one refurbished. One cautionary note: Tracking between machines can be marginal at the slow EP (SLP) recording speed, so you might have trouble playing some of your existing tapes on another VCR. The SP speed is a safer bet.

Wiring a House for Audio

Q I am building a house and would like to put wall-mounted speaker outlets in every room, all to be fed by an amplifier in the living room. How far should the speaker wire be from electrical and TV cables in the walls to be free of interference? Is a special wire required? And would it be possible to put on/off switches or other speaker controls in each room?

DAVID S. TURNER
Waukesha, WI

A Speaker wires carry high-level signals and are therefore mostly unaffected by interference from nearby power or television cables, so positioning is not very critical. Any good wire will work fine as long as it's heavy enough. Chances are some of the runs will be fairly long, and these should use a minimum of 14-gauge wire; 12-gauge would be better. Specialty speaker cables can be used if you can afford them and they provide equivalently low resistance, but they're not really necessary. As for switches, simple double-pole, single-

throw switches can be used in each location. Better still, use L-pad or T-pad controls to vary the level while presenting a constant impedance to the amplifier.

Before you do any of that, however, bear in mind that such a system might put an intolerable strain on your amplifier. The more speakers you have connected in parallel at a given time, the lower the total impedance of the system. Many amplifiers can barely tolerate two pairs of speakers, let alone six. There are speaker switchers from Niles Audio, Sonance, and others that provide compensation to prevent the impedance of the total load on the amplifier from dropping too low.

Rescuing Open-Reel Tapes

Q I have a large number of open-reel tapes recorded in the 1960's, and I want to copy them onto cassettes to preserve them. Most of the tapes are made of Mylar, and when I played one of them, it stretched and destroyed itself by wrapping around the reel hub. I haven't dared to try another tape, but I would still like to copy them. Is there any way?

HUGH D. WILSON
Sacramento, CA

A Those old reels can be tricky. Early polyester tape (Mylar is a brand of polyester) were almost impossible to break, but they were notorious for stretching. Under enough stress, the tape could turn into a filament the size of a thin piece of copper wire, which, as you have discovered, tended to wind itself around hubs and capstans with distressing regularity. Fortunately, such tape was only around for a short while and was soon replaced by "tensitized"—or prestretched—polyester, which is much harder. To tell which kind you have, snip a few inches of tape from the beginning of a reel and try to stretch it; if it stretches only a bit and then snaps, it's the later kind and should play without problems if handled with care.

Obviously, however, at least some of your tapes are the early variety. There are still a few things you can do to get one last pass (the same principles apply to early acetate and even paper tapes). A tape is most at risk when first put into play: The sudden jerk of both the capstan and the take-up reel apply large but short-lived forces to the tape that can easily stretch or snap it. If you splice several feet of "leader" (tape with no oxide) onto the beginning of the reel, it will absorb the main stress, and the regular tape should run smoothly thereafter.

Also, the torque of the take-up reel is greatest at the beginning, when its effective diameter is smallest, but you can reduce that by winding enough scrap tape onto the reel first to lower the start-up forces. Doing so may limit the amount of the original tape that fits onto the reel, however, so it is appropriate only when dubbing tapes from reels that are smaller than the maximum-size reel the recorder can hold.

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

Definitive's Award-Winning Center Channels and Bipolar Surround Speakers for Your Ultimate Home Theater

Absolute sonic superiority and unequalled value make Definitive loudspeakers your obvious choice.



The C/L/R 1000, the world's finest center, is also a superb left and right main speaker.

Enthusiasts and world renowned experts acknowledge the dramatic sonic superiority of Definitive loudspeakers for both the superb reproduction of music and the dramatic special effects and dialogue of home theater surround sound.

World's Finest Center Channel Speakers

Optimum surround sound reproduction places heavy demands on the center speaker, the most important speaker because it handles 50% or more of the program material. It is no place to settle for second best. Definitive's C/L/R 1000 and C1 are the finest shielded, low profile, high resolution center channel/main speakers available. They use superior state-of-the-art components and technology for extraordinary ultra

high definition articulate clarity and high power handling (C/L/R 1000: 300 watts, C1: 200 watts).

The BP2's Bipolar Advantage

BP2s are unique ultra compact high resolution bipolar (front and rear radiating) systems intended primarily for use on the rear/side surround channels of the finest home theater systems. Experts agree that Definitive's bipolars provide a perfectly diffuse sound source which is ideal for these applications.

The use of BP2s results in a much more lifelike, dramatic all-enveloping listening experience than is possible with conventional speakers. In addition, because of their superb performance characteristics, the BP2s also make exceptional main channel speakers.

Voted #1 for Quality & Reliability

Definitive speakers are consistently top-rated and were chosen by experts in *Stereo Review* for their home theater "Dream System." A survey of U.S. dealers voted Definitive speakers #1 for quality and reliability among all speakers sold in the U.S.!

Visit your nearest Definitive dealer today and hear why our superior sounding loudspeakers have won the industry's most prestigious honors, including the CES Design & Engineering Award, *Video Magazine's* ViVA Gold Product of the Year Award and the AudioVideo Grand Prix.

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PERIPHERALS

PRODUCTS AND TRENDS
THAT GO BEYOND
MAINSTREAM AUDIO/VIDEO

The New Multimedia Speakers

BY DAVID RANADA

Nature abhors an unfilled market niche. So it isn't too surprising that the big guys—speaker companies with names recognizable to STEREO REVIEW readers—have finally started releasing multimedia speakers. It's about time, for the multimedia speakers produced by computer-oriented companies have generally been pretty awful. No niche was ever so close to a perfect vacuum.

Of course, if the locations of your

computer and your home hi-fi listening setup will allow it, you can spare the expense of buying multimedia speakers altogether simply by running a shielded cable from your computer's sound outputs to a line-level input of your stereo system. But the loss of intimacy with the sound—the hi-fi speakers will seem too far away—will eventually send you in the direction of separate multimedia speakers for placement near your computer.

What's a Multimedia Speaker?

That's an easy one: a speaker intended for hookup to the sound outputs of a personal computer, regardless of whether those outputs are built in or part of an accessory sound board. All multimedia speakers are also, by definition, magnetically shielded, since they are typically used close to a computer monitor whose picture can be distorted by intense stray magnetic fields.

Many, but not all, multimedia speakers have built-in power ampli-

fiers and connect to a computer's line-level outputs. That is to be preferred to the alternate arrangement of using a sound board's power amplifiers (if any), which generally aren't powerful enough to drive good speakers cleanly to loud levels.

There are several reasons for wanting multimedia speakers beyond sonic intimacy. They are the same reasons that justify the existence of home hi-fi speakers, but in a different order of importance.

- The better the speaker, the longer you'll be able to use it without listening fatigue. This factor is especially significant if you're operating a multimedia machine for long stretches. Speaker attributes that help to reduce listening fatigue are an extended and smooth frequency response, freedom from distortion when playing loud, and the retention of clarity even while playing soft.

- Better speakers will improve your ability to judge the quality of recorded sounds. This is vitally important if you are creating multimedia presentations and especially if you're using your computer to compose music. First make crucial sonic assessments using good speakers, then play your program through the system you'll be using for presentation to make sure that not too much is lost.

- Many multimedia computer systems can be used simply to play music CD's while you work on other projects. So the better the speakers sound, the more pleasurable that listening will be.

Evaluating Multimedia Speakers

Any demo-room computer hooked up in a multimedia system should have a CD-ROM drive and software that together are capable of feeding a regular music CD into the speakers. And there's no more critical software for speaker evaluation than well-



Bose's RoomMate Computer Monitor (above left, \$339 a pair) combines a 4½-inch full-range driver, a power amplifier, and active distortion-limiting/equalization circuitry in a 6 x 9 x 6-inch ported enclosure. **Altec Lansing's ACS50 speaker system** (left, \$100) includes a pair of two-way speakers and an amp module (on top of the computer monitor) with two line-level inputs and a headphone jack.

At Under \$300, Definitive's DR7s are Absolutely "Incredible."

— Peter Moncrieff, *IAR*

Experts agree DR7s deliver dramatically superior sound and unbeatable value

Two of the world's most extraordinary speakers!

When Peter Moncrieff of *International Audio Review*, one of the world's most well respected high end audio journals, heard Definitive's DR7s, he had only one word for them, "Incredible." The top experts agree, and you will too!

Priced under \$249 ea. (DR7 Bookshelf Monitor) and \$299 ea. (DR7 Studio Tower), these extraordinary handcrafted loudspeakers have breathtaking three-dimensional imaging, dynamic lifelike clarity, natural musicality, astounding bass, and elegantly sleek designer styling which make them simply the best value in the history of hi fi.



How does Definitive do it?

Advanced technology and superb components, like cast basket drivers, transmission line bass tuning, low diffraction monocoque cabinets and Linkwitz-Riley crossovers, all help. But most importantly, we hear very well and we care.

Perfect for home theater.

Our HT7 System combines DR7s with our perfectly timbre-matched C1 jr center channel (\$199) and BP1 bipolar surround speakers (\$175 ea.) for a sonically stunning home theater which sounds clearly superior to competitors' systems selling for substantially more.

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The Koss COM/10 Computer Speaker Hanger (\$20), shown with Koss's HD/1 speakers (\$40 a pair), is adjustable for different monitors and speakers. A swivel attachment lets you angle the speakers to enhance near-field listening. The HD/1 has a 3-inch driver, a 7.2-watt amplifier that can run on four C batteries, and a bass control.

recorded music. So when you go shopping for multimedia speakers, take along a couple of music CD's and a CD or CD-ROM containing well-recorded spoken voices. Listen to these discs on your full-blown home system or with good headphones to remind yourself what they should sound like. Then shop for the multimedia speaker that best delivers the sonic goods. You should seek:

Extended bass response. The laws of physics decree that it shall be difficult to produce high-fidelity bass with small speakers intended for desktop placement. That's why some manufacturers have introduced systems with separate "bass modules" (it would be pushing it to classify these devices in the same category as true hi-fi subwoofers) to supply an octave or so of lows, the multimedia counterpart of a three-piece high-fidelity subwoofer/satellite system.

But as important as it is for music reproduction, don't become preoccupied with bass response, especially if most of the material you'll be listening to will be voice. A good speaker designer can produce a sound quality that will downplay the lack of low bass in systems without large or separate woofers. It's this balanced sound quality that you should be after rather than an artificial bass heaviness; it will prove less fatiguing over time.

Treble extension and smoothness. The cheapest multimedia speakers will produce neither bass nor high treble, imparting a telephone-like quality to the sound. Others may produce ample highs only directly on-axis, so that the speakers have to be aimed straight into your ears, which may be difficult to do when they are sitting on a desk.

A speaker with good treble performance will produce a natural and uncolored sound quality with voices and music. It will be neither muffled nor "sibilant" with voices or "edgy" with music.

Freedom from harshness when playing loud. Harshness can originate in several ways: speaker overload, poor frequency response, amplifier clipping, or combinations of the above with poorly recorded program material. Make sure the multimedia speaker you're auditioning can play as loud in the store as you would ever expect to hear it from your normal computer-operating position.

Useful controls. Since they usually contain their own power amplifiers, multimedia speakers are easily outfitted with useful electronic controls to alter their sound quality. Besides a level control, look for, at the minimum, accessible bass and treble controls (or a "loudness" control) that can boost the extremes of the frequency range. Controls with the proper capa-

bilities can be set to produce the illusion of properly balanced sound at softer-than-normal listening levels. Unfortunately, no manufacturer has yet issued a model with equalization counteracting the obvious sonic colorations caused by reflections from the desktop.

Using Multimedia Speakers

The typical multimedia speaker installation actually has some advantages over normal high-fidelity listening. The speakers are usually close enough for your head to create sonic shadows isolating each ear from the sound of the speaker on the other side. Such "near-field" listening can be headphone-like in the precision of its imaging and uncannily vivid in its reproduction of sonic depth.

Unfortunately, getting such good imaging and getting good bass response are nearly antithetical. The former usually improves the farther the speaker is from any reflecting surface (and both the desktop and the front of the monitor count as reflecting surfaces), while the bass output rises if a speaker is close to a reflecting surface.

So if bass is still your obsession, remember that you can increase the apparent bass output of any speaker by placing it against a large surface or two (the desk-wall corner is probably most convenient). Pricy and inconvenient though they may be, three-piece multimedia speakers can provide a best-of-both-worlds solution: Mount the satellites up off the desk and close to your ears, and put the woofer module against a wall or in a corner. With the right speakers adjusted properly, the results would do any home hi-fi system proud. □

Acoustic Research's Powered Partner 622 speaker system (\$349) features a pair of 5½-inch-tall satellites, each with one 2½-inch driver, and a bass module with a 6-inch driver, an active crossover, and three amplifiers. Power output is 30 watts to the woofer, 8 watts to each satellite. The bass limit is 50 Hz.

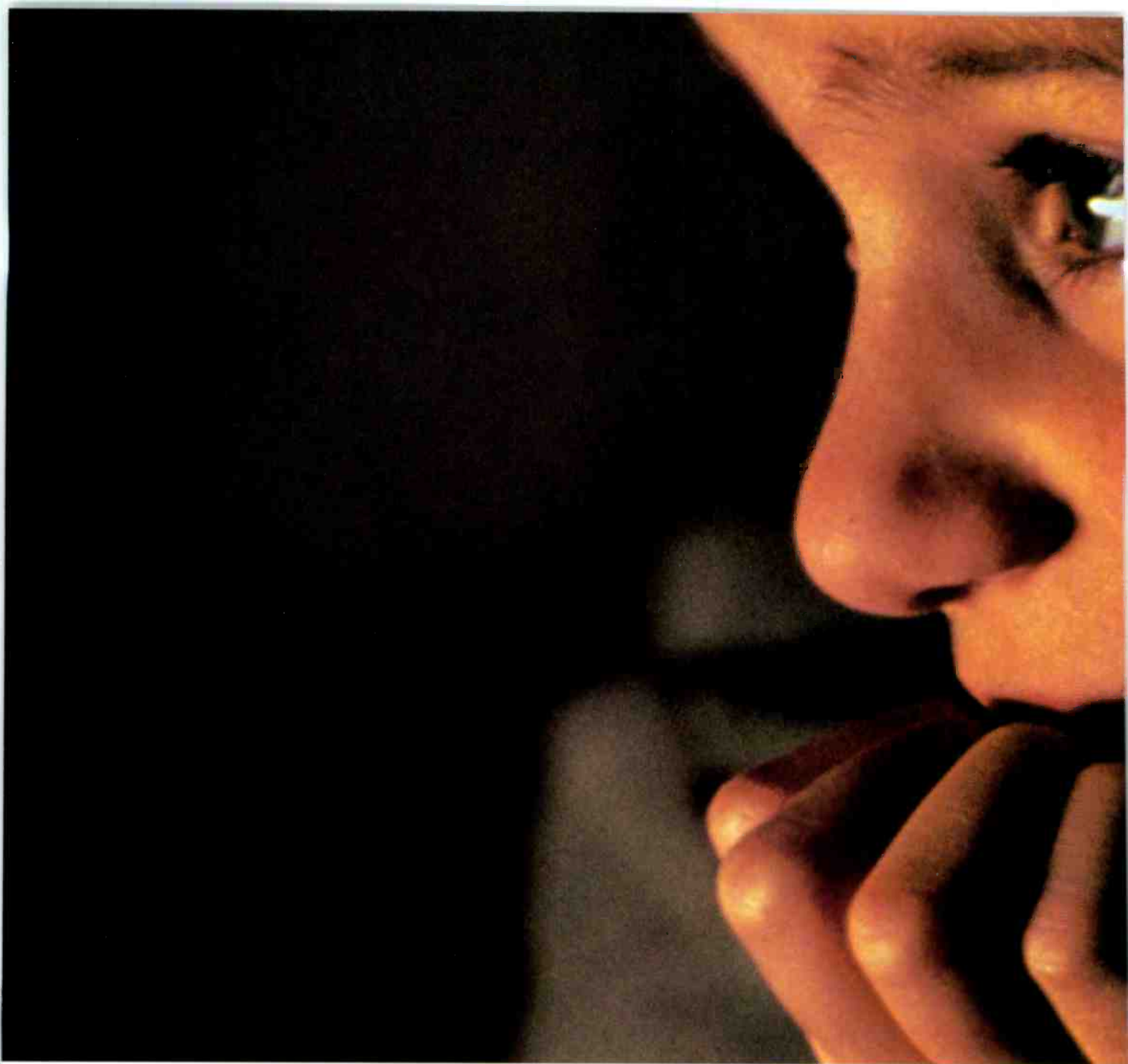


How to turn an evening at home
into a night at the movies.



A guide to getting full, rich movie theater sound
from a Virtually Invisible® speaker system.

BOSE



Remember when watching a movie was more than a way to pass the time? When it was fun? When it fired your imagination?

That's because the big screen provides a larger-than-life view of the world of make believe. And the true-to-life sound that goes along with the picture is what turns make believe into reality. It turns characters into real people, pulls us into the action, sets the pace, and summons our emotions. And it does it so effectively, we are

transformed from mere observers into participants in the drama that unfolds before us.

Until recently, even though re-creating the excitement of the movie theater at home was possible, it was available to only a few – those who could afford the expensive electronics, those who were not intimidated by the complex components, and those who had enough room to contain it all.

But now, with the availability of affordable, high resolution big screen TVs, hi-fi VCR's and laser disc players,

and advanced speaker technology, the ability to re-create the fascination of the movies – right in our own homes – is well within the grasp of many more families.

Beginning with the following article, written by Tim Holl, Manager of Research Operations at Bose Corporation, this guide describes how you, too, can enjoy the excitement of the movies in your home. □



The most exciting part of your video could be the audio!

By Tim Holl Excitement. That's what I felt when I took home an early laser disc player, hooked it up to my sound system and settled back to watch *Raiders of the Lost Ark*. I was totally absorbed – until I was jarred out of Indiana Jones' world by the sound of his voice somewhere off-screen, when I saw him speaking on-screen. Audio for video clearly wasn't as simple as the "audio only" material I was used to.

Over the years, work on high quality audio for video has been almost

exclusively in movie theater sound – very different from home sound. In the theater, the listening space is larger. More importantly, the larger screen matches the sound stage size exactly. At home, even rear-projection screens provide comparatively small images – much smaller than the audio image delivered by normal stereo systems. So, when you design your home system, you must take care to seamlessly integrate the sound with the small screen video.

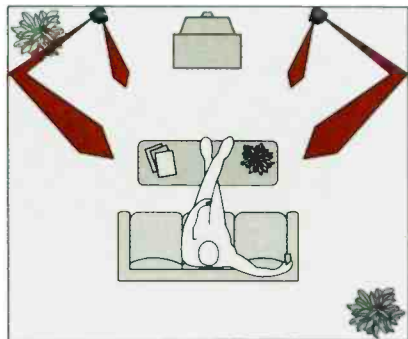
But don't be daunted. We'll examine the benefits and drawbacks of various approaches, from the simplest use of a current stereo system, to a full multi-channel system. You'll soon understand home theater's requirements, potential pitfalls, and what's available to build with. And you'll see that it can be done with surprisingly inconspicuous equipment.

The first step is to connect your video sound to your stereo system and place your TV screen midway

between the speakers. This immediately improves the tonal balance and extends the audio image to the width of the space between the speakers.

Although on-screen vocal localization is not as good as with the TV sound, the system is much better than TV alone, particularly on video material with a musical soundtrack.

If your speakers produce deep bass, you'll hear another benefit. Movies



Connect the video sound to the stereo system and place the TV between the speakers for improved tonal balance. (Effect illustrated with Bose® Direct/Reflecting® speakers.)

often use bass to provide clues to the overall atmosphere of scenes. A deep, continuous bass note imparts danger, such as when enemy spaceships come into view. Without good bass performance, loudspeakers literally don't produce these notes – and the effect is totally lost.

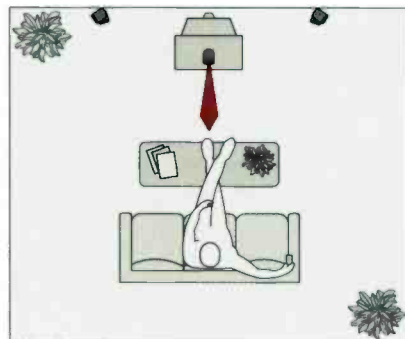
The second step is to improve vocal localization. On TV much of the sound is speech, which we expect to be localized on the screen. However, the phantom center image produced by wide-spaced speakers doesn't provide on-screen localization.

Turning up the TV's volume a bit can help. A better solution is to move your stereo speakers next to either side of the screen. (They must be magnetically shielded so they don't interfere with the picture.) This narrows the sound stage, but provides high quality sound with excellent on-screen vocal localization.

Slightly more complex audio-video systems include a steering logic surround decoder. They can provide many benefits, even if you do not intend to use a surround channel in the

rear. They let you enjoy on-screen vocal localization without sacrificing a wide stereo image. Front channel steering is effective on most material, even if it isn't surround encoded.

In most video material, speech is recorded monophonically for good on-screen localization. A steering logic surround decoder directs the monophonic content of the program to the center channel only. (Surround decoders with-



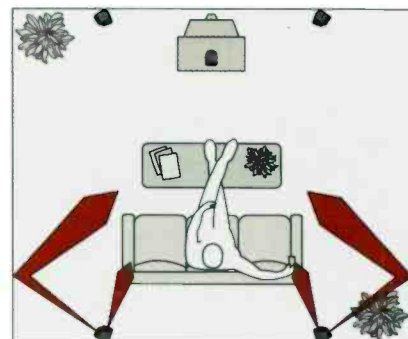
Second, add a steering logic sound decoder and an acoustically matched center channel for on-screen vocal localization.

out steering logic don't provide this benefit. Even if they have a center channel, they feed monophonic signals equally to the right and left channels.)

Now you need a center channel loudspeaker on top of or adjacent to

Place them high on the rear wall where furniture won't interfere between the speakers and the viewer. If deep bass wasn't necessary, any number of speakers would work. But, most surround encoded movies include bass in the surround channel, which must be adequately reproduced by the surround speakers to get the full impact.

If you use a three-piece system with a separate bass enclosure for the rear



Third, complete the system with rear channel speakers with deep bass to get the full impact of surround encoded material. (Effect illustrated with Bose Direct/Reflecting® speakers.)

channel, be sure you put the bass unit well away from the speakers reproducing bass for the front channel. If the two bass units are too close together, the time delay in your surround decoder will cause the bass notes from

The system will be much better than the TV alone, particularly on video material with a musical soundtrack.

the TV. It must be magnetically shielded; but, since its purpose is to localize speech, it does not have to produce deep bass.

Finally, a complete audio-video system should include rear channel speakers. And, since there are now several speakers in the room, it's a good idea to select inconspicuous models..

front and rear to interfere with each other and produce severe and unwanted effects known as comb filtering.

In a full surround system, the rear effects are only correctly reproduced on surround encoded material. However, the left-right-center steering produced by the decoder will be effective on most material, encoded or not.

So it is a good idea to switch the rear speakers off for non-encoded material but to leave the decoder active. You'll still get excellent on-screen localization, even on the non surround-encoded material, but arbitrary rear sounds will not detract from your enjoyment.

Whether you build your home theater system all at once, or one step at a time, always build with an overall plan in mind.

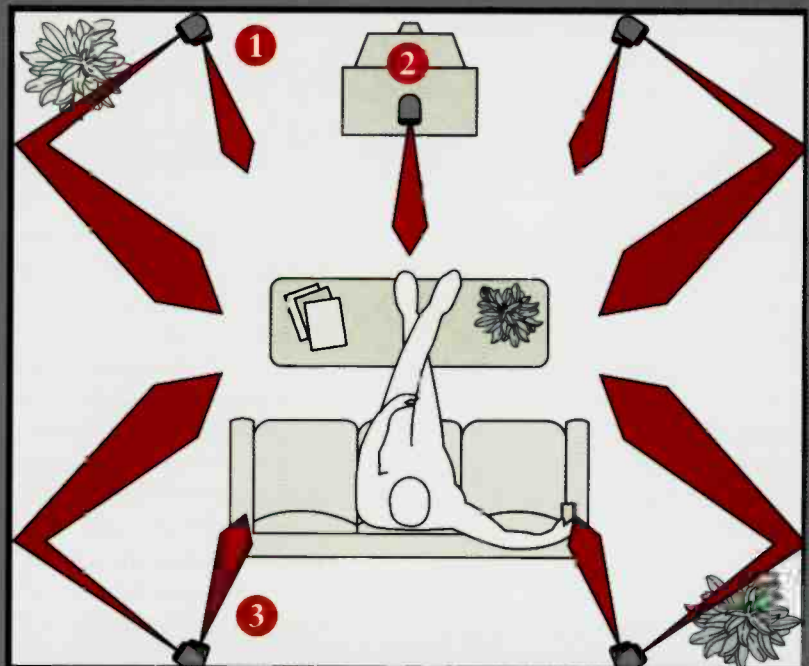
- To maintain a consistent tonal quality as the sound moves from channel to channel, choose front, center, and rear channel speakers that are as acoustically matched as possible.

As *Stereo Review* said, "If the center speaker doesn't match the sound of the left and right front speakers, imaging and clarity will be impaired."

- To capture all the impact of today's sound tracks, choose front and rear speakers with full range response and wide dynamic range.
- Be sure the radiation pattern of the front and rear speakers provides a wide sound stage. This is important in reproducing the fullness of musical scores and the ambient sound accompanying large visual fields.
- Remember, in most cases, more than one person will be watching. This will put viewers at different angles and distances from the speakers. When you audition speakers, listen to a movie sound track from several locations to be sure you can hear all the channels at each location.
- And, finally, make sure the sound system you select will fit into your room with enough space to allow comfortable viewing.

Choosing a system that meets all these criteria can be daunting. But recent breakthroughs in sound reproduction technology, combined with proven speaker design, now makes selecting a home theater sound system easy. Once you take that first step, you may wonder how you put up with ordinary TV sound, and find yourself renting those old favorites again to hear what you missed the first time. □

Home Theater Speaker System Placement Using Bose® Direct/Reflecting® Speakers.



1. Front Speakers

Should be placed above furniture for a wide, uniform sound stage to allow the fullness of the music and sound effects to reach a variety of listening locations.

2. Center Channel

Should fit on top or just underneath the TV and localize on-screen voices to on-screen action.

3. Rear Speakers

Should have the tonal characteristics of the front speakers, including full bass response and wide dispersion.



With Acoustimass® speaker technology in your home theater system, your eyes won't believe your ears.

Patented Bose® Acoustimass speaker technology delivers sound so clear and lifelike, it can rival the best movie theaters. When the first Acoustimass speaker was introduced, *Stereo Review* said "...side by side with speakers costing three to five times as much, the AM-5 (Acoustimass-5) consistently produced the more exciting and listenable sound..."

The part you see.

While Acoustimass technology puts you in the center of the action by enveloping you with sound, that doesn't mean you're surrounded by bulky equipment. The Virtually Invisible® speaker design takes care of that with speakers so small they fit in the palm of your hand and a bass module you can slip behind or under furniture.

All you see is the Virtually Invisible® speaker arrays. Their surprising size is made possible by the extended range

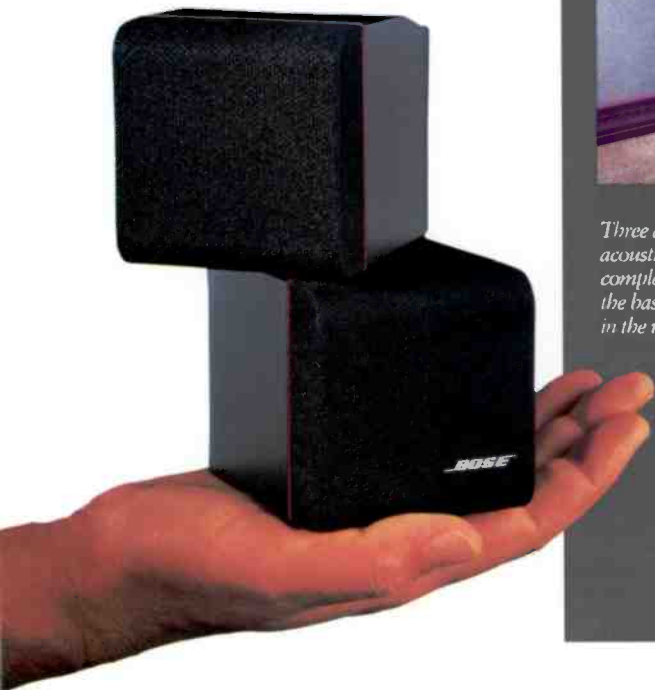
of the hidden Acoustimass bass module. You'll think all the sound is coming from the arrays, including the bass. And each array can be rotated to reflect a portion of the sound off the walls of the room to help re-create the spaciousness of a movie theater and a uniform sound field throughout the listening area.

As *Stereo Review* said "...its powerful, room-filling sound emerges from satellite speakers which could easily be held on the palm of one's hand..." Each no taller than a video tape, they can be placed conveniently on a shelf or mounted on a wall or ceiling with optional mounting brackets. (Floor stands are also available.)

The part you don't see.

What you don't see is the hideaway Acoustimass bass module. Its patented technology was developed by Bose to radiate sound directly into the room via an air mass rather than a vibrating cone. The result is a deep, pure bass response with no audible distortion.

The Acoustimass bass module is designed to produce bass so efficiently that a conventional bass system would need four times the size to deliver the same bass response. The result is a bass module small enough to hide behind a curtain or under a chair. And because the module produces no audible distortion to give away its location, it can be placed almost anywhere in the room.



Acoustimass Speaker Technology

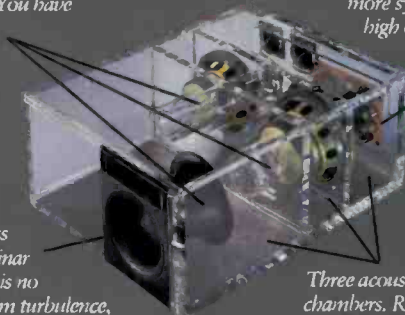


You can hide an Acoustimass bass module nearly anywhere in the room. All the music, even the lowest bass notes, appears to come from the tiny cube speakers, regardless of where the bass module is hidden.

Three acoustic masses provide 36dB/octave acoustic crossover rolloff! You have complete freedom to hide the bass module anywhere in the room.

System protection circuit for more system protection at high output volumes and increased reliability.

Elliptical toroid conduit for the radiating air mass provides for laminar air flow so there is no audible noise from turbulence, even at high loudness levels.



Three acoustic compression chambers. Reduced cone motion eliminates audible distortion.

Build your home theater speaker system in one or two easy steps.



Acoustimass-7 home theater speaker system.

Acoustimass® systems are available with either two or three cube speakers, each precisely matched in sound quality. So you can buy your entire system now, or just the front channel system now and rear channels later. Either way, you're assured of complete compatibility because each system is acoustically matched to the other.

By combining acoustically matched systems, you can create a complete five-speaker system that takes less space than many televisions, yet sounds like many of the best movie theaters.

Acoustimass-7 home theater speaker system.

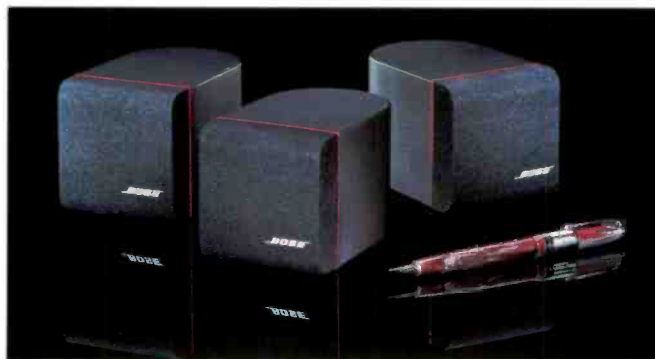
The solution for lifelike, movie-sized sound from a Virtually Invisible® speaker system, these three tiny front speaker arrays deliver lifelike, spacious sound. Hidden anywhere you like is the compact bass module. Yet all the sound appears to come from the arrays.

With its Bose® Direct/Reflecting® speaker design, this system re-creates a natural balance of reflected and direct sound that conventional speakers cannot



match. By swiveling the top cube of each speaker, you can tailor the mid- and high-frequency pattern to your preference. Magnetic shielding inside the arrays allows you to place the center channel speaker on or near your TV, to accurately position on-stage dialogue.

Add the acoustically matched Acoustimass-5 speakers for a five-



Acoustimass-4 home theater speaker system.

speaker system with total sound quality consistency. Every seat in the house becomes the best seat in the house.

Acoustimass-4 home theater speaker system.

The solution for big screen sound from an even more compact and affordable system, the Bose Acoustimass-4 speaker system shares much of the technology of the Acoustimass-7 system. Yet its smaller cube speakers and even more compact bass module make its big screen sound fit into the smallest screening areas. And it won't crowd your budget.

Engineered to take full advantage of Acoustimass speaker technology, the Acoustimass-4 system features three tiny, magnetically shielded cube speakers. Each is less than 4 inches high, yet together they fill the room with clear mid- to high-frequency sound. From the center channel, you hear crisp dialogue. Left and right channel speakers project their wide stereo image far beyond the limits of your screen. Hidden from sight, the bass module establishes the lows that set the mood.

For a five speaker system, add the acoustically matched Acoustimass-3 speaker system for the rear channel.

Check your local newspaper for special offers.

Then go look. And listen. You'll find there's an Acoustimass home theater speaker system to fit your needs and your budget. Or call us toll free for more information and the names of authorized dealers.

1-800-444-BOSE
Ext. 286 (1-800-444-2673)

Monday - Friday 9AM - 9PM
Saturday 9AM - 5PM

If you think
home theater means a room full
of speakers the size of movie posters...

Think again.



With Bose® Acoustimass® home theater speaker systems you'll no longer just watch a train cross your TV screen. You'll feel it rumble right through your living room.

**Home
Theater
Made
Easy**
Acoustimass Systems

*"In fact, the more I use Acoustimass speakers,
the more amazed I am."*

Julian Hirsch, Stereo Review

1-800-444-BOSE

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SPECIAL CD OFFER

Rhino's Atlantic Jazz Gallery

Rhino Records continues its program of remastering and rereleasing the distinguished catalog of Atlantic Records with a new series that is a tribute to the great jazz artists who recorded for Atlantic. The releases in the series, called Rhino Presents the Atlantic Jazz Gallery, began last summer and will stretch over a period of eighteen months. Now Rhino is making a CD sampler of these legendary jazz artists available to readers of STEREO REVIEW.

Rhino's previous entries in our special CD sampler program were *Roots of Rock-and-Roll* (April 1990) and the *Rhino Atlantic Remasters Collection* (October 1992), which were particularly well received by our readers. During 1993, to celebrate STEREO REVIEW's thirty-fifth anniversary year, we have amplified our program of special CD offers, and it seems appropriate to close the year with yet another tempting offer from Rhino. To get your copy of the Atlantic Jazz Legends special CD sampler, simply send in the coupon below with a check or money order for \$3.50, which covers postage and handling.

Atlantic's is one of the few great jazz catalogs that had not been reissued. Joel Dorn, a former Atlantic producer and now producer of the new Atlantic Jazz Gallery reissues, says, "The musicians whose music gives this catalog life are among the finest ever assembled under one banner. The scope and quality of the music contained within this body of work make it one of the world's most important collections of recorded jazz."

Rhino points out that while Atlantic's artists included the extraordinary composer/performer Charles Mingus, the flutists Hubert Laws and Herbie Mann, the Modern Jazz Quartet with its blend of blues and Bach, the singer/pianist Mose Allison, and such famous pianists as Les McCann and Ray Charles, the label was really defined by its saxophone players. John Coltrane and Ornette Coleman, often considered the most influential sax men since Charlie Parker, both recorded for Atlantic. So did such other sax men as the multitalented Rahsaan Roland Kirk, the million-seller Eddie Harris, and the exotic multiculturalist Yusef Lateef as well as David "Fathead" Newman and Hank Crawford. These players gave Atlantic an unparalleled saxophone roster, and all of them, along with the other artists mentioned above, are represented on the new Rhino sampler.

The contents are: *Hard Times* (David "Fathead" Newman), *Compared to What* (Les McCann & Eddie Harris), *Whispering Grass* (Hank Crawford), *The Golden Striker* (Modern Jazz Quartet), *The Inflated Tear* (Roland Kirk),



Comin' Home Baby

(Herbie Mann), *Ramblin'* (Ornette Coleman), *Your Mind Is on Vacation* (Mose Allison), *My Favorite Things* (John Coltrane), *Sweet Sixteen Bars* (Ray Charles), *Nubian Lady* (Yusef Lateef), and *Wednesday Night Prayer Meeting* (Charles Mingus). The playing time is 73 minutes.

Rhino's Senior Director of A&R Special Projects James Austin says, "By paying tribute to these legendary jazzmen, Rhino is not trying to change jazz history, but simply to reemphasize Atlantic's place in it. When customers pick up one of our packages, we hope they'll think it's the best they could get from any company that draws on Atlantic jazz. We'll have been successful if long-time jazz fans are satisfied and if the novice listener is inspired to dig deeper into a particular artist's body of work."

Whether you are a novice or a long-time jazz fan, we invite you to help us celebrate our birthday by ordering the Rhino/Atlantic CD sampler. We think you'll be doing yourself a favor, and you may find that this year we've saved the best for last!

RHINO'S ATLANTIC JAZZ LEGENDS SAMPLER

For STEREO REVIEW readers only

Send coupon and a check or money order for \$3.50, which covers postage and handling, to RHINO RECORDS, Department SR, 10635 Santa Monica Boulevard, Los Angeles, CA 90025.

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Do not send cash. Make check or money order payable to RHINO RECORDS. Outside the United States send US\$6. Please allow six to eight weeks for delivery. (Offer void after January 31, 1994.)



TECH TALK

BY JULIAN HIRSCH

Too Much Technology?

A recent item from the Associated Press in our local newspaper caught my attention, not because it had anything to do with high fidelity (which was never mentioned), but because its subject seemed to have a universal and continuously expanding influence on the lives of most people, specifically including those who buy and use audio equipment.

The article reported on a study by Dell Computer Corporation suggesting that a sizable percentage (actually, a majority) of Americans suffer from "technophobia"—a distrust or fear of technology as it affects their lives. A large number of adults are intimidated by computers and worry about damaging them because of inexperience or ignorance of their operation.

But what has that to do with high fidelity? If you have tried to operate some of today's highly sophisticated audio components, you must be aware of the pitfalls they can present, especially to the technophobe.

Granted, today's audio components employ vastly more complex and advanced electronic circuits than their predecessors, and many have no predecessors from analog days. But one of the virtues of digital systems is that they can be made to function in many respects with little or no human interface. Why, then, are they so intimidating to so many people?

I have a few thoughts on that subject, for I have often been as frustrated as that hypothetical "man on the street" when faced with today's most elaborate audio/video components.

First and foremost, I think a sizable piece of the blame for the situation lies with consumers themselves. Too many people simply do not bother to *study* (rather than merely skimming) the instruction manual, whether for a wristwatch or a home theater system.

I fail to understand why anyone expects to be able to use any product without finding out *what* it is supposed to do and *how* to make it work.

Once upon a time, most products in any specific category were pretty much alike. If you could use one buggy whip or plow, you could use any of them. Even products as complex as a modern automobile are sufficiently standardized that anyone who can drive one make or model can usually drive another make or model reasonably well. Of course, he might not be able to use the radio or heater with full effectiveness, or even have an inkling of the existence of many of the features that contribute to making one car more desirable than another. A lot of people who spend tens of thousands of dollars for a car will not use a large portion of its capabilities simply because they never get around to reading its manual.

We have a very similar situation with today's audio and audio/video products. In this industry, as in many

disclose the designer's intentions for a particular control or feature.

On the other hand, reading the instruction manual will often answer your questions about the operation of a product, no matter how complex it may be. Unfortunately, increasing complexity makes this outcome decreasingly likely. But if you have invested in an expensive component, or several of them, it is a shame to waste its capabilities by not exploiting them to the fullest—or at least to the fullest extent of your needs. Probably there are some features that are really not necessary or useful for you, but you'll never know if you don't find out what your system *can* do before deciding what you *will* do with it.

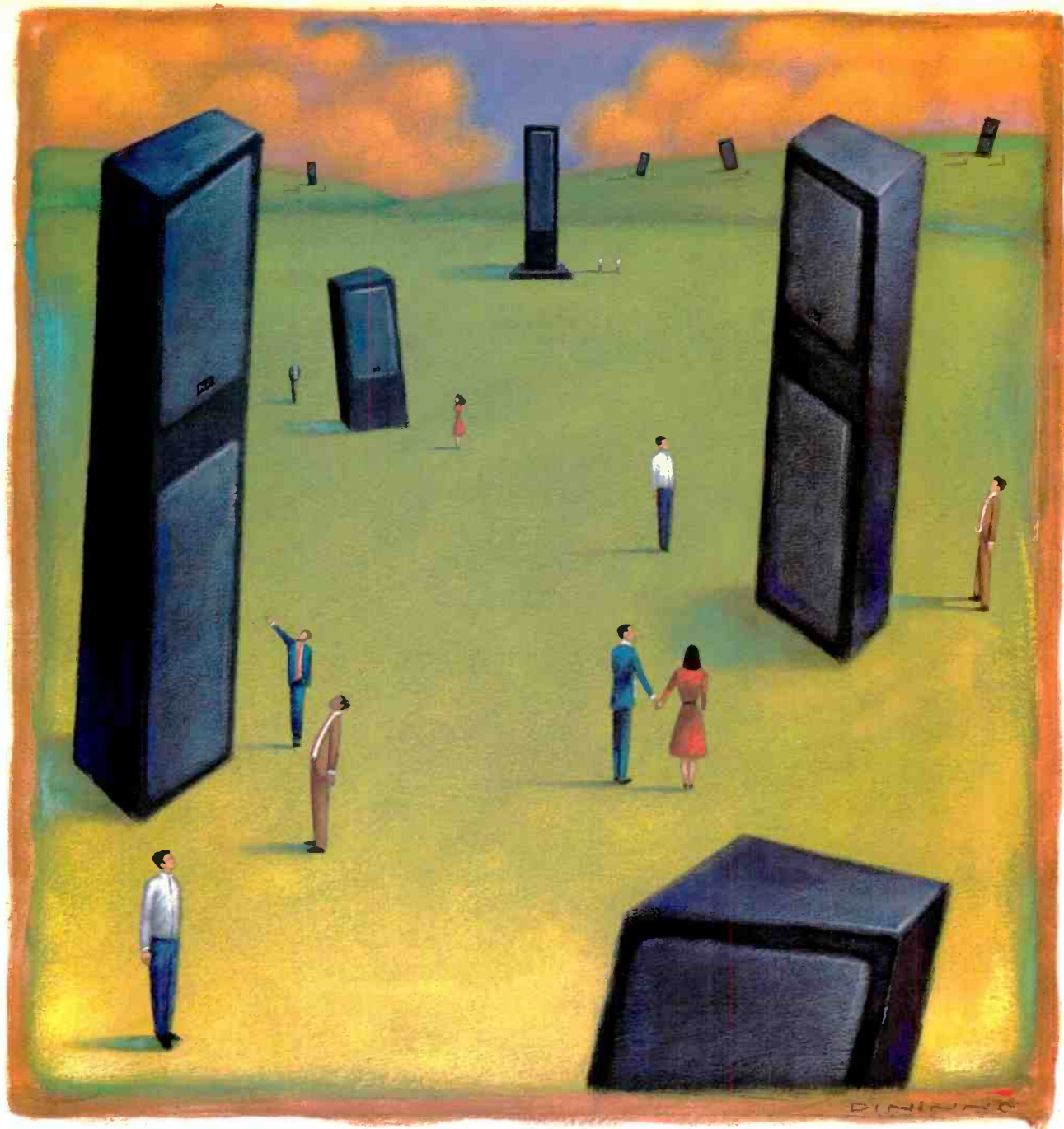
Having urged you to read manuals that frequently are not very good, I will offer you the small solace that most computer manuals I have seen are far worse than anything to be found in the audio world. The most serious offenders deal with software, however. We are indeed fortunate that

If you have tried to operate some of today's sophisticated audio components, you must be aware of the pitfalls they can present.

others, there is a strong drive for innovation, or at least distinctiveness, in the appearance and operating features of new products, and often even in the terminology used to describe those features. If you have tried to use a feature-laden A/V receiver without reading its manual, you may have found yourself confronting the same difficulties facing the user of almost any high-tech product.

It can be terribly confusing, I'll admit. I regularly face the problem of deciphering the occasionally bizarre nomenclature that has long been a prominent part of the audio landscape. Sad to say, too, there are cases in which even the most careful examination of the operating manual fails to

our software (CD's, tapes, or whatever) requires no great technical prowess to use. So let's concentrate on mastering our relatively straightforward hardware and enjoy the full potential of our music systems. Despite what I have said so far, it is not so difficult as to be beyond the reach of anyone willing to make a little effort, and there is no reason to be nervous or frightened when dealing with audio components. Almost invariably, the manual alerts you to actions that might prove harmful to the equipment or yourself. Mistakes, however temporarily unpleasant their consequences, will usually be steps on the road to better sound and greater satisfaction with your system. □



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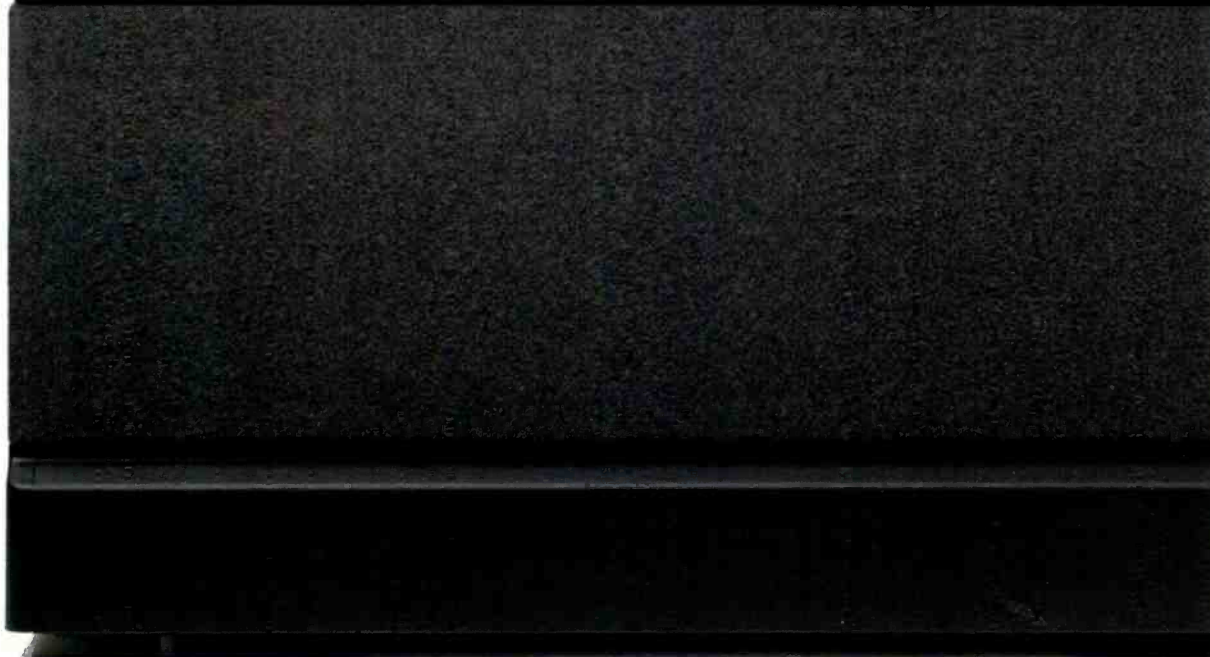
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Who says you can't accomplish anything by sitting in front of a TV all your life?

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Researching. Improving. Perfecting.

So when you buy a new Mitsubishi big screen you're not just buying a new TV, you're buying 15 generations of technological advancements.

Take the VS-5071 displayed on the left. Like the rest of our 1994 line of big screen televisions, its predecessors include the world's first 50", 60", 70" and 120" screens. As well as the first slim cabinet big screens ever to be offered to the viewing public.

Of course, for those more interested in technology than genealogy, rest assured our latest models continue to offer innovations you won't find in any other big screen.

Like selective-light lenses for purer color reproduction, dark-tint black matrix screens that absorb stray room light and enhance sharpness, and scandium oxide-coated electron guns, which keep our picture clearer and brighter over time. (In fact, after ten years of normal use, ours retains 90% of its original brightness. Others retain only 50%.)

The final result is a family of big screens whose picture quality rivals even our best direct-view TVs.

For more information about our highly evolved line of big screens, and the name of your nearest Mitsubishi dealer, please call us at 1-800-937-0000, ext. 102.

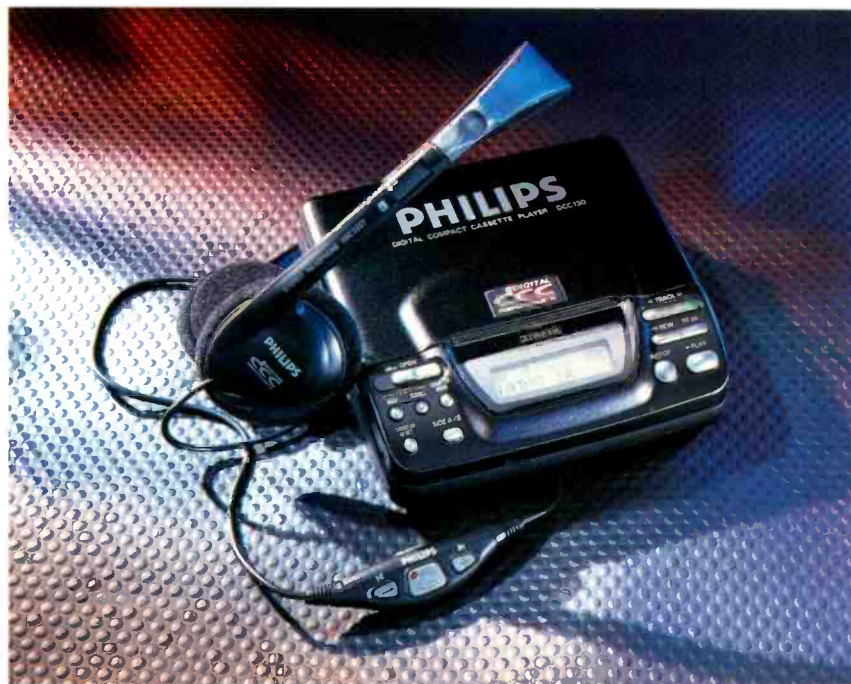
You'll soon see that even if you just sat there for the rest of your life watching every movie from *Annie Hall* to *Ziegfeld Girl*, it would be a very rewarding life indeed.



Mitsubishi offers the most extensive line of big screen TVs featuring slim cabinet design. Compact internal lenses allow us to build our cabinets 30% slimmer without compromising picture quality.

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TEST REPORTS



far: Although the big gape makes it easy to insert a tape when the player is resting on a flat surface, it also invites incorrect cassette loading, which could damage the mechanism inside. Unlike current home DCC recorders, which use a nine-track turnover head, the DCC-130 uses an eighteen-track fixed head. The new head makes the mechanism smaller and more robust, and it conserves power as well.

A rocker button is used to select forward or reverse track-skip, by as many as ninety-nine tracks on a DCC or nine tracks on an analog cassette. Another rocker controls fast-forward and rewind. The stop button turns the DCC-130 off if you press it when the player is already in stop mode. If the player is in stop mode and no button is pushed for 4 minutes, it automatically switches itself off.

Two buttons provide access to the text information on prerecorded DCC tapes: The mode button steps through the album title, artist name, and track title, and the scroll button is used to read messages longer than the twelve-character display. A counter-mode button selects display of "absolute time" (elapsed time from the beginning of the tape), track time, total time, or a simple hub-turns counter for DCC's; only the counter is available when playing analog cassettes. A counter-reset button zeroes the tape counter, and a side A/B button reverses tape direction.

Along the right side of the player you'll find a hold switch, to prevent accidental operation of any of the other buttons, and a switch to select single reverse or continuous play at the end of a side. On the back are a DC power jack, analog outputs, and a Toslink optical digital output. The left side holds a Dolby B on/off switch for analog cassette playback, a three-position dynamic bass-boost switch, a headphone jack, and a rotary volume control for the output. As with most portables, the battery is held in a compartment on the bottom of the chassis.

The top-mounted liquid-crystal display provides a wealth of information, including text messages, timing and track numbers, and indicators for tape

Philips DCC-130 Portable DCC Player

KEN C. POHLMANN • HAMMER LABORATORIES

Although compact disc sales keep rolling along and gaining momentum, there is no question that the analog cassette remains an important music medium. This is particularly true in portable applications, where low-cost battery-powered cassette players are almost as ubiquitous as baseball caps. Seeking to capitalize on the popularity of portable cassette players and to extend the life of such products into the next millennium, Philips has at last followed the introduction of home DCC (Digital Compact Cassette) recorders with portable DCC players.

The DCC-130 has a slightly smaller footprint than most portable CD players, but it is about twice as thick, and in terms of overall volume, it winds up being considerably larger. It is also about 50 percent heavier than many portable CD players, mainly because

of its rather large battery. The reason for that is to increase the DCC-130's playing time, which at 2½ hours is comparable to that of many portable CD players.

At first glance, the DCC-130 would probably be mistaken for a portable DAT player. When the open button is slid to the left, a clamshell lid partly opens, and it can be opened quite a bit wider by hand—more than 50 degrees. I was surprised that the lid opened so

DIMENSIONS

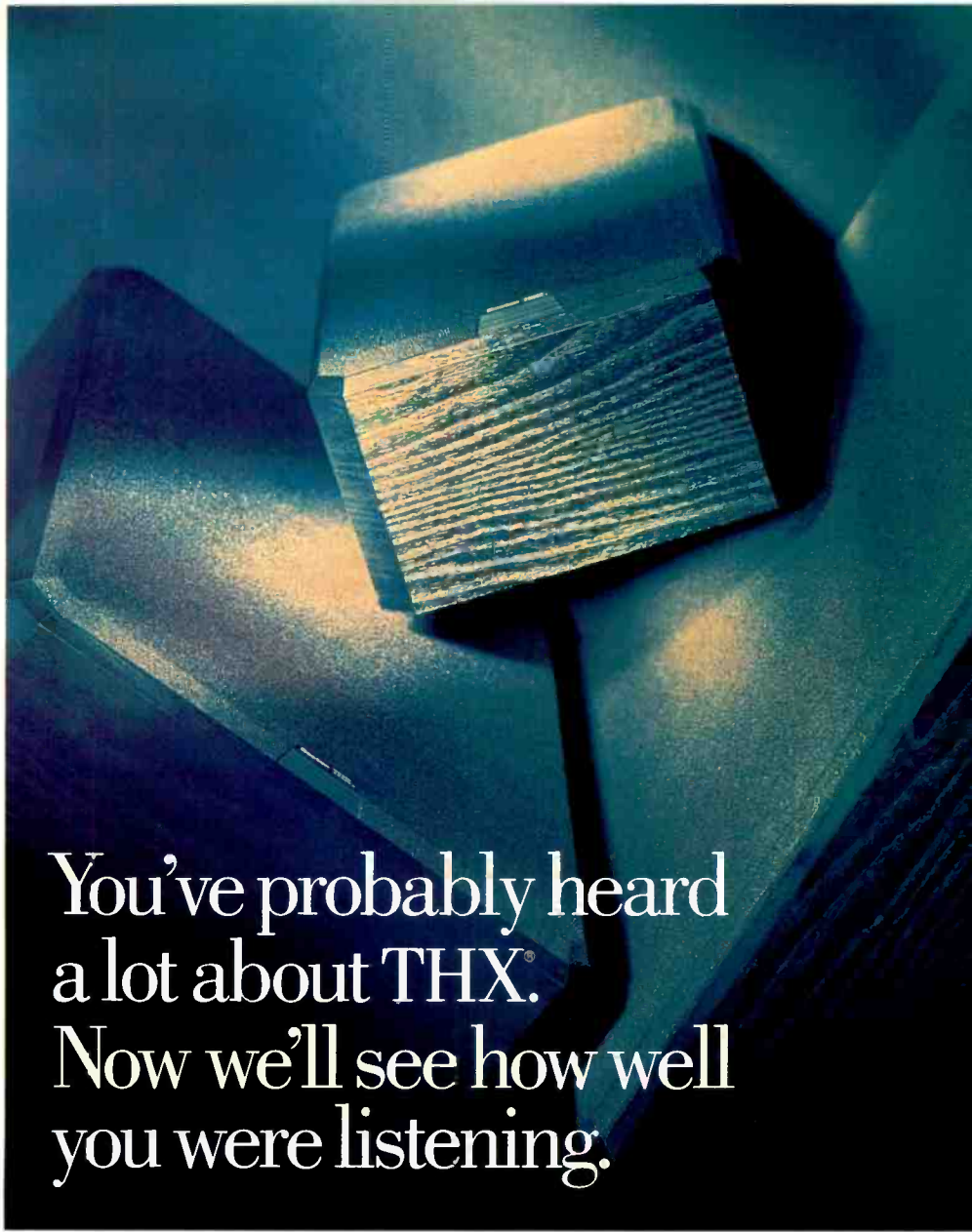
4¾ INCHES WIDE, 1½ INCHES HIGH,
4¾ INCHES DEEP

PRICE

\$550

MANUFACTURER

PHILIPS CONSUMER ELECTRONICS CO., DEPT. SR.
ONE PHILIPS DR., KNOXVILLE, TN 37914-1810



You've probably heard a lot about THX. Now we'll see how well you were listening.

What the heck is this THX thing?

A running shoe? A dessert topping? Misconceptions abound. But here's the skinny. THX is a system designed by the folks at Lucas Entertainment. Its aim: to make a film sound just as impressive from your easy chair as it did from the director's chair in his fancy high-tech dubbing suite.

MISCONCEPTION #1. Most people think THX uses a new and different encoding method. Not so. In fact, at its heart, the THX controller has a Dolby ProLogic decoder, so it accepts any Dolby-encoded TV program, video tape or laser disc (unfortunately, that includes *Ishtar*). We like to think of it as Dolby ProLogic, refined.

MISCONCEPTION #2. Some folks think you need to buy the entire system all at once. But, in fact, the pieces of the Boston THX system are available separately. You can even power them with your existing Dolby ProLogic receiver and upgrade to the THX electronics later.

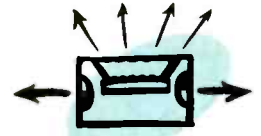
The system consists of six THX speakers, and a THX controller/amplifier combo. Boston Acoustics THX speakers offer a great deal more than conventional speakers when it comes to home theater. Specifically, dialog is clearer, effects are more readily localized

on and off screen, and panning is more natural (a horse galloping across the screen sounds as such, with a smooth transition from side to side). All of this thanks to the 555x speaker's narrow vertical dispersion pattern. Sound travels to your ears without ricocheting off the floor or ceiling, which can blur crucial dialog and effects.

Another advantage: a sense of

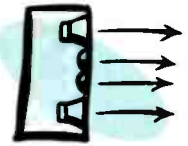


To receive a free copy of Number, the Boston Acoustics magazine of music, circle Reader Service No. 9



MISCONCEPTION #3. A surround is a surround. Nope. By firing sound forward and rear, the dipole 575x surround washes your walls with sound. Thereby transporting you to the middle of a canyon, a city street, or the forest planet Endor (please don't feed the Ewoks). In fact, we believe the 575x is the finest surround speaker ever built.

true space is achieved with Boston 575x surrounds. These dipolar speakers, unlike conventional ones, use walls to reflect sound several times before it reaches your ears. So the sound envelops you and you feel like



MISCONCEPTION #4. THX is electronics. Actually, most of what THX is lies in how the speakers are configured. Take our 555x front speaker. We had one aim in building it: your ears. Sound disperses horizontally, but is limited vertically. Since the sound you hear hasn't bounced off of the floor or ceiling first, dialog is incredibly clear, effects are crisp.

you're right in the middle of the scene. And finally, what's a movie without an explosion or two?

So we built the tight, powerful Boston 595x subwoofers to deliver the visceral side of a movie's sound effects and music. All of which can be heard at your local Boston dealer. Stop by for a demo. Now that you know what you're listening to.

Boston Acoustics
Just what's important

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TEST REPORTS

side, play mode, track-search mode, DCC playback, low battery, and other items. The LCD is backlit when the player is plugged into its AC adaptor.

The DCC-130 comes with a number of accessories. Most significant are a 4.8-volt nickel-cadmium battery and an AC-adaptor/battery-charger, which is unusual in having a cradle for charging a battery outside the player. The charger can top off a battery in an hour and has two indicator lights to show when it is powered and when it is charging. The adaptor/charger accommodates AC line voltages from 100 to 240 volts. The DCC-130 also comes with a soft vinyl and cloth carrying case, a phone-plug adaptor cable, and headphones with an in-line wired remote control. The remote provides pause, rotary volume control, track skip, play/stop, tape reverse, side A/B, fast-forward, and rewind. An LED embedded in the remote lights to verify operation. Last, but not least, Philips throws in a DCC sampler tape.

The DCC-130 delivered generally impressive results on the test bench. Speed error and wow-and-flutter were both reasonably low with analog cassettes and essentially unmeasurable with DCC tapes. DCC playback response was good (with only a 1.13-dB drop at 20 kHz), channel separation was very wide, and linearity error was negligible. A-weighted signal-to-noise ratio (S/N) was also good, but I would like to have seen a better unweighted S/N, even though it is less significant perceptually than the A-weighted measurement. Analog-cassette playback measurements were typical for a portable player.

After charging its battery, I stuffed the DCC-130 into a body belt along with a variety of tapes and headed for the great outdoors. Operation was very easy and intuitive, especially since several functions are handled automatically. For example, the player automatically senses whether the tape is analog or digital. If analog, it determines whether the tape requires normal or chrome/metal equalization, and if digital, whether the sampling frequency is 32, 44.1, or 48 kHz. As you might expect, the Dolby B circuit is automatically bypassed when playing back a DCC tape. I was also pleased to note that information such as the absolute time, track number,

MEASUREMENTS	
Measurements were made at the analog outputs. Those listed are for the worse of the two channels.	
Fast-wind time (C-90/DCC-90)	145 sec
Speed error	
analog	-0.24%
digital	below measurement limit
Wow-and-flutter (IEC peak-weighted)	
analog	0.35%
digital	below measurement limit
Line output for indicated 0 dB	1.05 V
DIGITAL PLAYBACK	
Frequency response	
	16 Hz to 20 kHz +0.02, -1.13 dB
Channel separation	
1 kHz	72.6 dB
10 kHz	75.4 dB
Signal-to-noise ratio	
A-weighted	80.7 dB
unweighted	56.4 dB
Distortion (THD+N at 1 kHz)	0.026%
Linearity error (at -90 dB)	+0.2 dB
ANALOG PLAYBACK	
Frequency response	
	32 Hz to 18 kHz +0, -3.15 dB
Channel separation	
1 kHz	35.2 dB
10 kHz	33.1 dB
Signal-to-noise ratio	
no noise reduction (A-weighted)	53.8 dB
no noise reduction (unweighted)	50.2 dB
Dolby B (unweighted)	53.0 dB
Distortion (THD+N at 1 kHz)	1.2%

counter setting, and tape direction are saved in memory when the player is turned off (they are cleared when you open the clamshell, however).

Other functions, such as track skipping, worked well. It is a pleasure to click on the skip button and have the player reliably find the right track for you, even if it does take longer than it would with a disc. Unfortunately, when skipping tracks on a DCC tape, the player does not automatically select the tape direction that will reach the desired track in the shortest time. This smart-searching capability was a welcome feature on home DCC decks, so I am surprised that it was not incorporated in this model, where it would

save time as well as battery power.

I subjected the DCC-130 to a jogging test and found that analog tapes were vulnerable to vibration, which caused fairly severe wow and flutter. On the other hand, analog playback was not affected by direct shock to the top or bottom of the player. DCC tapes suffered the opposite problem: Although DCC playback was immune to normal vibration, it was affected by impact to the top or bottom, which would momentarily mute the audio output, as with a CD player.

Sound quality was quite good when the player had a chance to strut its stuff. The supplied headphones were mediocre and limited the fidelity, but with better headphones, reproduction was superb. DCC tapes truly provide all the sound quality of CD or DAT playback—in other words, you cannot buy a better-sounding portable audio player. Prerecorded DCC tapes and tapes I recorded on a home DCC deck sounded excellent. Playback of analog tapes was also good, but clearly nowhere near DCC quality. Overall, analog playback was similar to that of a high-quality analog-only portable.

Returning home, I auditioned the DCC-130 over a home stereo system, using both its analog and digital outputs. The sound was quite good via the analog outputs, attesting to the quality of the DCC-130's internal digital-to-analog (D/A) converters. When using the optical output, you bypass the internal conversion circuits, enabling direct digital recording to another digital deck or playback through an external D/A converter. The digital output operates only when the player is powered from its AC adaptor, but that shouldn't normally be a problem.

Although the DCC-130 had a few rough edges, as is typical of any first-generation product, its no-holds-barred sound quality makes it a winner. It is a remarkable piece of engineering and completes the DCC trilogy of home, car, and portable products. Most important, the DCC-130 also validates the DCC digital/analog litany that it is literally possible to enjoy the future, yet take the past with you. This impressive portable should silence many DCC critics, persuade many doubters, and perhaps spark some serious excitement among consumers. □

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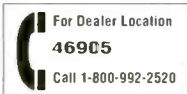
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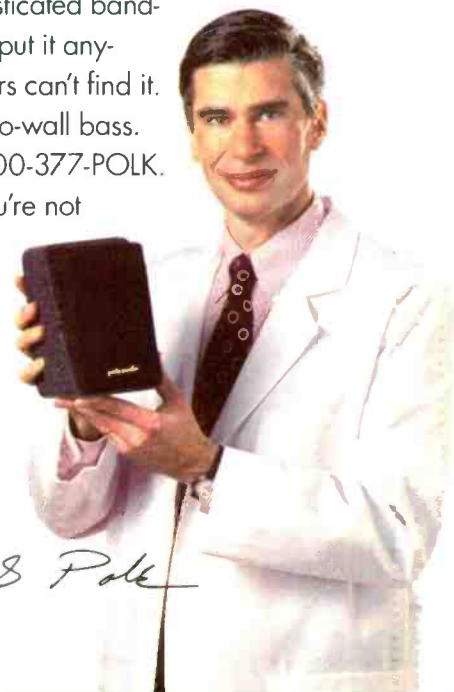
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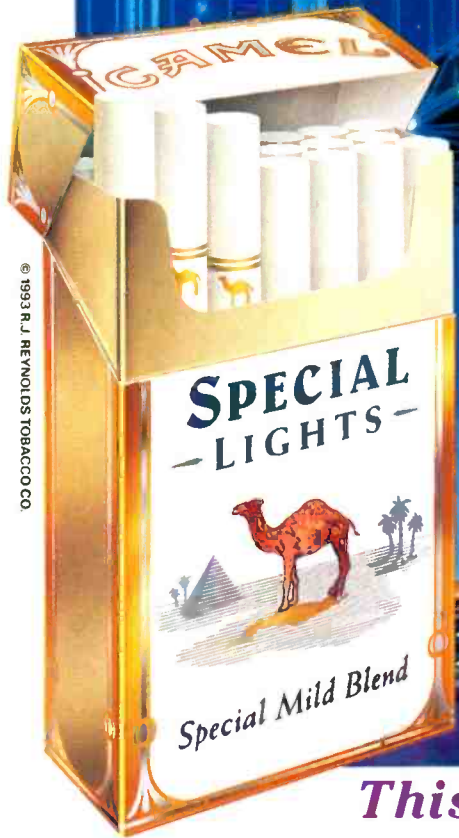
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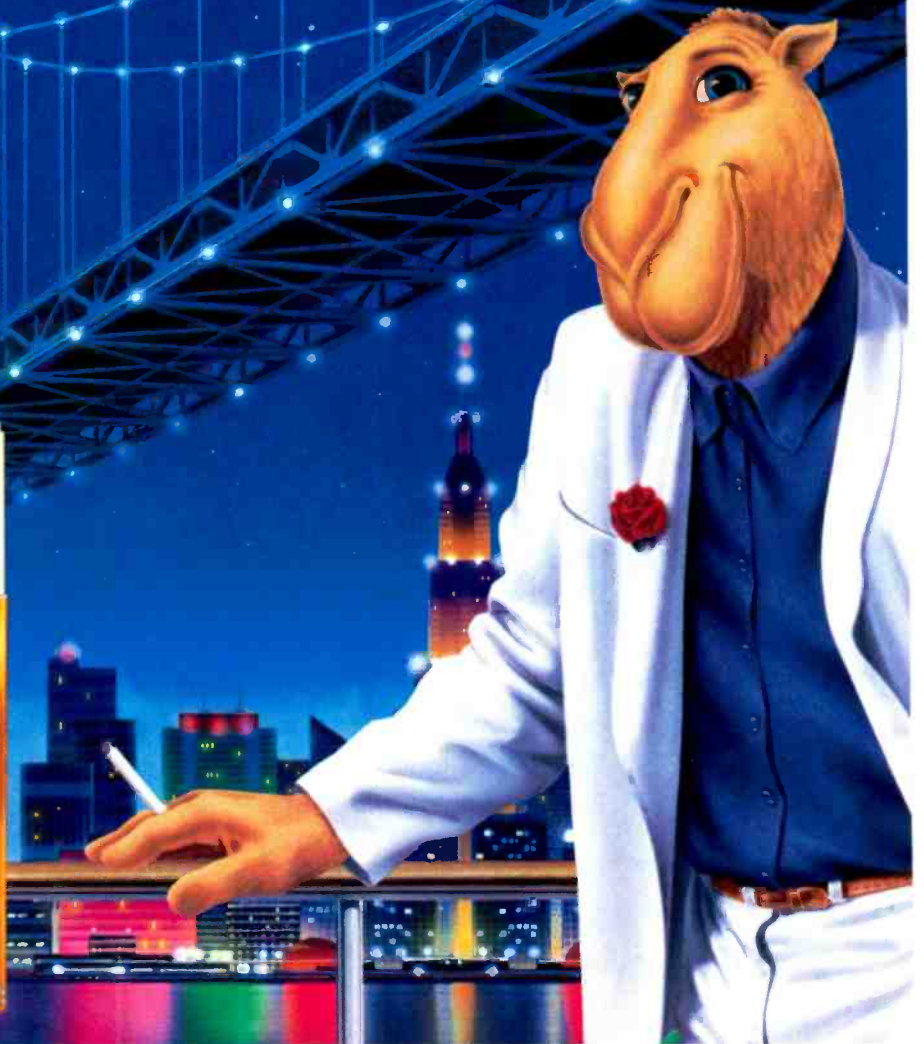


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TEST REPORTS



Wharfedale Diamond V Loudspeaker System

JULIAN HIRSCH • HIRSCH-HOUCK LABORATORIES

Almost a decade ago, Wharfedale (one of the earliest British loudspeaker manufacturers) introduced a diminutive two-way speaker system that delivered remarkable sound quality. The Diamond, as it was called, was widely recognized for its wide-range, smooth, uncolored sound and very small size, at a price (in 1984) of \$190 a pair. Improved versions of the Diamond appeared over the next few years, and in April 1989 we reviewed the Diamond III, which by then had a list price of \$300 a pair. The process of refinement has continued, and now we have the Wharfedale Diamond V, price unchanged. (The Diamond III remains in the line, incidentally, reduced to \$200 a pair.)

Although the Diamond's size has increased slightly over the years, it is

still one of the smallest speakers that can legitimately claim hi-fi quality. Its new curved, molded-plastic speaker panel is said to enhance the system's high-frequency dispersion as well as its appearance (it is one of the few speakers that actually looks *better* with its grille removed). The wooden cabinet feels like solid concrete or

steel when rapped, with not a hint of audible resonance.

The basic speaker complement remains virtually unchanged, although both drivers are new. A new 5-inch woofer, with a polypropylene cone and multilayer voice coil, is used with a newly designed 1-inch aluminum-dome tweeter, cooled and damped with magnetic fluid. The enclosure, ported on its rear panel, is made of 15-millimeter (approximately 5/8-inch) particleboard except for the front panel, which is 1 inch thick in addition to having a rigid plastic front molding.

Wharfedale claims a frequency range of 47 Hz to 25 kHz for the Diamond V. Its sensitivity is given as 86 dB sound-pressure level (SPL) at 1 meter with a 2.83-volt input. The nominal impedance of the system is 6 ohms, and it is rated to stand up to 100 watts input. Wharfedale says the Diamond V was designed to give its best bass performance when placed 2 to 12 inches from the wall behind it.

It was impractical for us to locate the Diamond V speakers that close to the wall; instead, we placed them on 26-inch stands a couple of feet from the wall behind them. In that position, their averaged room response was very flat above 1 kHz, varying only ± 1.5 dB from 800 Hz to 12 kHz. There was a tweeter resonance of about 5 dB at 14 kHz. In the woofer range (with a close microphone spacing), the maximum output was at 120 Hz, falling gently at higher frequencies and at 12 dB per octave below about 90 Hz. The woofer response spliced to the room curve in a somewhat ambiguous manner at about 1 kHz. The actual transition might have been somewhat lower, but our choice seemed to correlate best with what we heard.

The Diamond V's quasi-anechoic MLS frequency response was among the flattest we have measured through the middle- and high-frequency range, with a variation of just ± 1.5 dB from 500 Hz to 10 kHz and ± 3 dB from 300 Hz to 20 kHz. High-frequency dispersion was also good, with the output 45 degrees off-axis down only 5 dB at 10 kHz and 8 dB at 20 kHz.

One of the Diamond V's most impressive qualities was its bass extension. Although the bass level dropped off appreciably with decreasing frequency, the fact remains that this little

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speaker, which can be held on the palm of one hand, put out a healthy 50 Hz when required, as well as a perceptible 40-Hz fundamental. Unless the speaker was pushed to its limits, its bass remained true, instead of degenerating into distortion as would happen with most other small speakers.

The impedance curve exhibited two bass resonance peaks, 22 and 26 ohms at 100 and 30 Hz, respectively, and a maximum of 18 ohms in the range above 100 Hz. The minimum impedance was 6 ohms at 60 and 250 Hz.

The Diamond V's measured sensitivity was 88 dB, somewhat better than rated. At a constant drive level of 3.5 volts, corresponding to a 90-dB-SPL reference level, woofer distortion was between 0.5 and 1 percent from 2 kHz down to 100 Hz, rising to 2 percent at 65 Hz and 5 percent at 40 Hz.

Although the information supplied with the speakers did not mention their crossover frequency, group-delay measurements suggest that it is about 4 kHz. The system withstood single-cycle burst inputs of 600 to 800 watts at 1 and 10 kHz without damage or untoward sounds, but at 100 Hz the sound became hard at about 22 watts and progressively harder as the power increased to 145 watts, where the woofer cone clearly reached the limits of its suspension. The speaker suffered no damage from this rather abusive treatment, however.

In listening tests, the Wharfedale Diamond V sounded every bit as good as its measurements would suggest. It had a full-bodied sound, not at all thin, although with music that contained strong, deep bass it could not match larger speakers having more driver area or enclosure volume. Still, its sound was invariably remarkable for such a small speaker and remained musical and balanced at all times. Also (and very unusual for a speaker of this size), the Diamond V's bass output extended low enough to make it usable with a *real* subwoofer (one that operates only below 50 Hz or so), unlikely as such a configuration might seem.

We are impressed that Wharfedale has managed to hold the line on the Diamond's price despite inflation and design improvements. At \$300 a pair, the Diamond III was a terrific value five years ago, and the Diamond V is an even greater one now. □

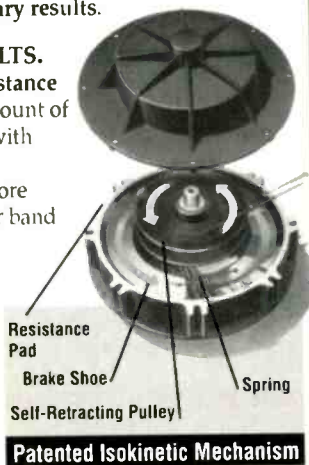
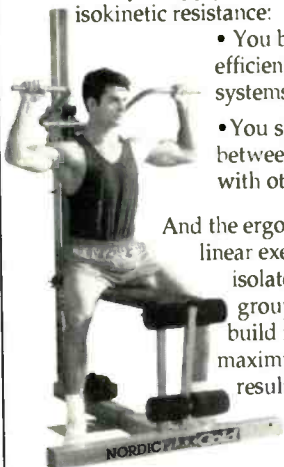
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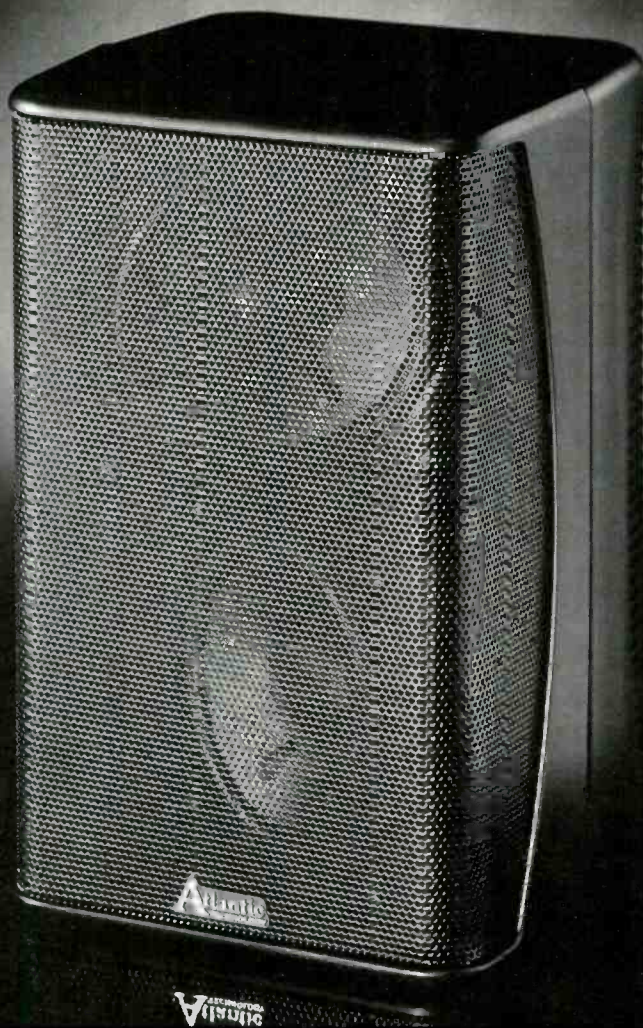
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TEST REPORTS



Definitive Technology DR7 Bookshelf Loudspeaker System

JULIAN HIRSCH • HIRSCH-HOUCK LABORATORIES

Definitive Technology's first loudspeakers were floor-standing bipolar designs (pairs of drivers on opposite sides of the cabinet, radiating in phase with each other to the front and rear). Later came the more conventional, less expensive DR7, also a floor-standing speaker but with just a single set of forward-firing drivers. Recently the company introduced a version of the DR7 suitable for shelf or stand mounting. Called the DR7 Bookshelf, it differs from the original (now known as the DR7 Tower) principally in height. The greater height of the 35-inch DR7 Tower gives it slightly deeper bass extension than the 22-inch DR7 Bookshelf.

The DR7 Bookshelf has a 6-inch woofer mounted midway up the front

of its vented enclosure. The woofer has a mineral-filled polymer cone and a rugged cast-magnesium basket. It crosses over through a phase-coherent Linkwitz-Riley network to a 1-inch soft-dome tweeter with an aluminum voice coil and magnetic-fluid cooling.

DIMENSIONS

8½ INCHES WIDE, 22 INCHES HIGH,
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PRICE

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MANUFACTURER

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The tweeter is located above the woofer and offset slightly to the right. The bass port is on the front panel, near the bottom.

Input binding posts, recessed into the back of the cabinet, accept single or dual banana plugs as well as stripped wire ends or lugs. The cabinet, which is heavily braced internally, is finished in black with what might be described as a generic woodgrain (the manufacturer describes it as "high-tech black"). The frame of the removable black cloth grille is designed to complement the speaker panel so as to minimize diffraction of sound from the cabinet edges.

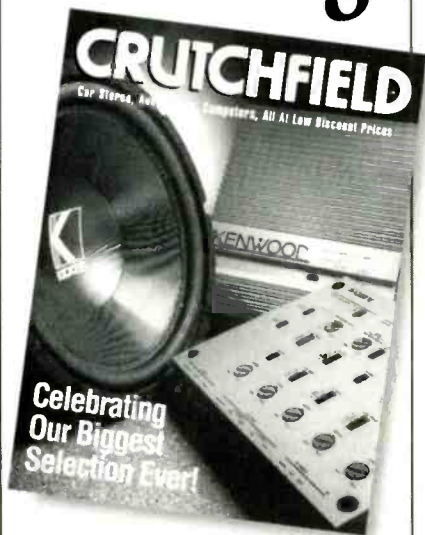
Definitive Technology's specifications for the DR7 Bookshelf are minimal, but its frequency range is given as 26 Hz to 28 kHz, its sensitivity as 90 dB SPL (sound-pressure level) at 1 meter with an input of 2.83 volts, and its nominal impedance as "compatible with 8-ohm outputs." The DR7 is recommended for use with amplifiers rated between 20 and 200 watts per channel. It is available both separately and as part of Definitive Technology's new HT7 home theater package, which combines a pair of DR7 Bookshelves with a tonally matched C1 jr. center-channel speaker and a pair of BPI bipolar surround speakers for just over \$1,000 total.

We mounted the DR7's on stands, weighted with sand, that placed the tops of the cabinets 35 inches from the floor. They were positioned 6 feet apart and 18 inches from the wall behind them, angled slightly toward the center of the room.

The averaged room response of the two speakers was quite uniform, within ± 3 dB from 300 Hz to 20 kHz. Quasi-anechoic MLS response measurements confirmed this result, showing a mere ± 2 -dB deviation in the on-axis response over the same range. The close-miked bass response peaked at 70 Hz, falling off at 12 dB per octave at lower frequencies and sloping down slightly above 70 Hz. The composite frequency response was ± 5 dB from 38 Hz to 20 kHz. High-frequency dispersion was typical of 1-inch dome drivers, with the output 45 degrees off-axis falling by 2 dB at 6 kHz, 5 dB at 10 kHz, and 13 dB at 20 kHz.

Group-delay measurements indicat-

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ed that the crossover was at about 2 kHz. The group delay varied only about 100 microseconds overall from 4 to 20 kHz and less than 2 milliseconds from the lower woofer range through the crossover to the tweeter.

The system impedance reached a minimum of 3.8 ohms at 170 Hz. There were two bass peaks, 14 ohms at 25 Hz and 11.5 ohms at 75 Hz, and the maximum reading was 20 ohms at 13 Hz. Sensitivity was 90 dB, as rated, and at that level woofer distortion was between 0.5 and 1 percent from 2 kHz down to 70 Hz. It rose at lower frequencies to 4.5 percent at 40 Hz, approximately the useful lower limit of the speaker's response. Our single-cycle tone-burst tests showed that the DR7 can handle high input levels without excessive distortion. At middle and high frequencies, it withstood the maximum power our amplifier could deliver—410 watts at 1 kHz and 670 watts at 10 kHz—without distress. At 100 Hz, the speaker began to sound hard at 185 watts input.

The DR7 Bookshelf sounded as good as it measured and clearly was well ahead of most similarly priced speakers we have tested in all the important subjective characteristics—frequency extension in both treble and bass, tonal balance, and imaging (which I use in

the sense of simulating the effect of a seamless soundstage between the speakers and a little beyond them, with a sense of depth).

When compared with a number of substantially more expensive speakers, the DR7 not only was a peer of any of them, but in numerous A/B comparisons it usually outperformed speakers priced as much as two or three times higher. Even a pair of well-known British speakers, comparable to the DR7 in size and driver complement but originally (some years ago) selling at more than three times its price, and which I had always considered to have superior imaging qualities, came off a poor second to these remarkable speakers.

Of course, individual judgments of speaker quality are always affected by the local acoustic environment and the specific program material, to say nothing of the listener's personal taste. Depending on all the above and more, the Definitive Technology DR7 Bookshelf may or may not be the "best" speaker (whatever that means) of its size or configuration. But as far as I am concerned, it *is* the best-sounding speaker that I have heard in my home selling at anywhere near its price. It is a remarkable value no matter how you define that term. □



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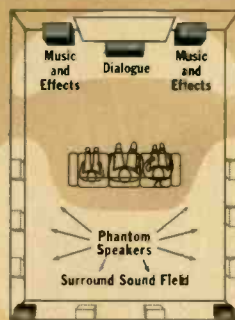
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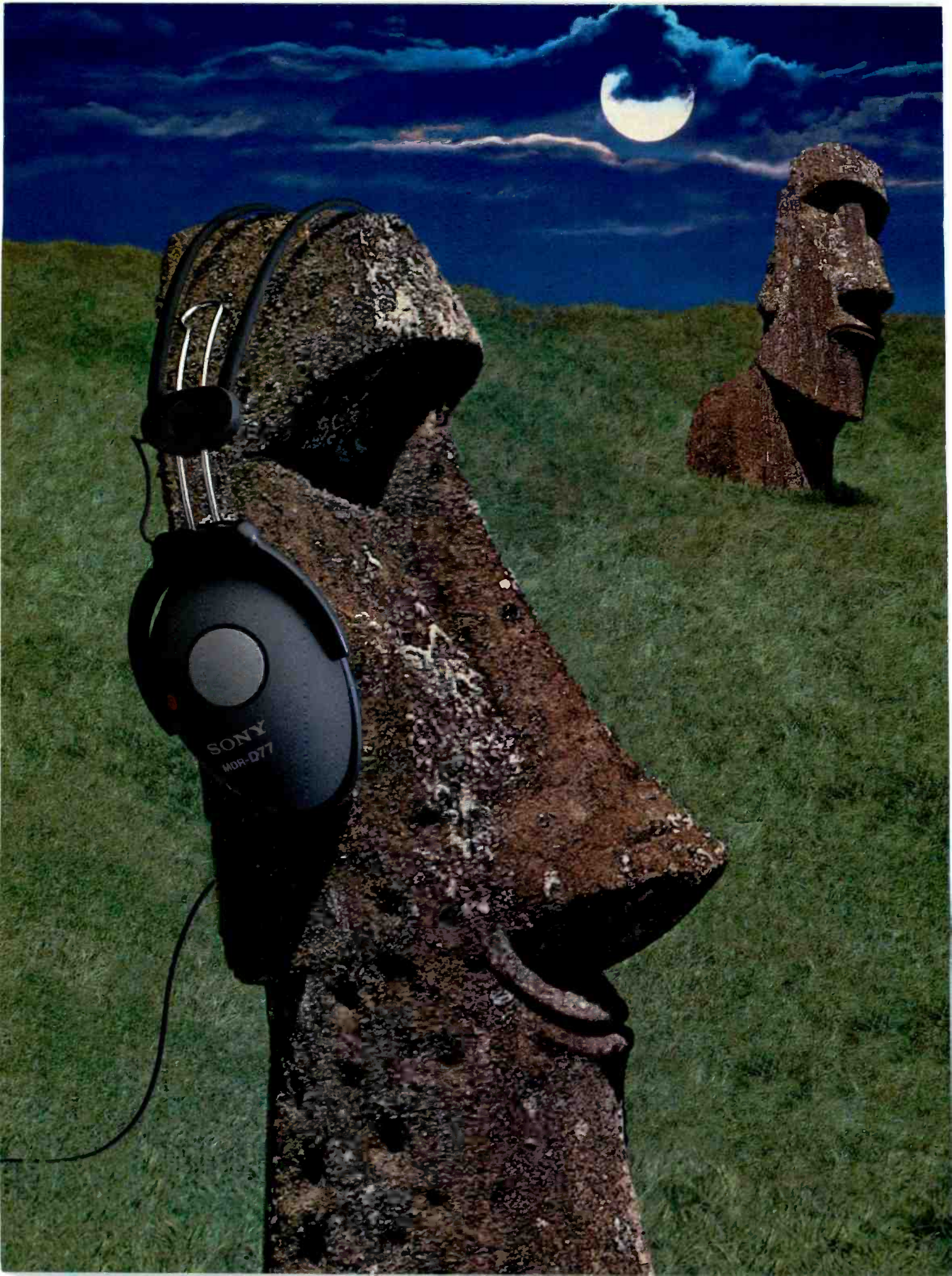
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TEST REPORTS



Pioneer Elite CLD-97 CD/Laserdisc Combi-Player

DAVID RANADA • TECHNICAL EDITOR

The new flagship of Pioneer's line of combination laserdisc and CD players is the CLD-97, a member of the company's Elite series of high-performance components. And though mild-mannered in appearance, it boasts a wealth of performance and convenience features.

Included are the usual cueing controls plus all the extras you would expect from a high-end player—more than we have space to describe in detail. Suffice it to say that the CLD-97 leaves out nothing useful except the ability to cue to, or display, CD index points (a common omission, and a minor one given the scarcity of indexed CD's nowadays).

Among the most important features is a field memory that gives long-play (CLV) videodiscs nearly all the special playback features that would otherwise be available only with standard-

play (CAV) discs — freeze frame, multispeed forward or backward playback, strobing, and so forth. If you find these capabilities useful, this feature alone could save you hundreds of dollars in disc purchases, since you can buy the less expensive CLV versions of your favorite movies and still do detailed frame-by-frame analysis. The only CAV tricks not available with CLV discs are those related to cueing by frame number or by abso-

lute time (because CLV discs don't carry the information necessary to do them).

Besides automatic videodisc side-changing, other important features include twenty-four-selection programmed playback capability, eight repeat modes (memory, A/B, single chapter/track, one side, both sides, program, random, and program random), and an automatic track-editing function that programs tracks that will fit within a specified playback time (handy for making cassette copies of CD's, for example). The CLD-97 also has a feature called Hi-Lite Scan, which, in its standard operating mode, plays 8 seconds of each track on a CD, presumably so that you can select those you want to hear. Strangely, playback is begun *one minute* into each track. The starting point can be reset to any location within a track, however, even the most logical one: the beginning. The standard mode for the equivalent laserdisc feature does start at the beginning of each chapter, and this cannot be changed.

Hookup is simple. Two identical sets of audio/video outputs are provided. The phono-jack audio outputs are at the far right of the back panel, while

DIMENSIONS

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PRICE

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Introducing The Next Best-Selling Loudspeaker Of All Time.

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More than 30 years ago, Henry Kloss designed the now-legendary KLH Model Six, the first speaker to fully exploit the potential of two-way design. By using the then-new principle of the acoustic suspension woofer, as well as creating a new type of long-throw integral-dome tweeter, he was able to make a speaker that provided outstanding performance at a moderate cost. A decade later, he took these principles still further with the Advent loudspeaker, one of the best selling speaker models of all time. Both speakers were considered industry benchmarks for price/performance.

We are now pleased to announce Cambridge SoundWorks' Model Six, a two-way system named in honor of Henry Kloss' first ground-breaking two-way system.

Not An "Extension Speaker."

Model Six is not an "extension speaker." It's a serious *main* speaker with sufficient frequency range and power-handling to satisfy serious listeners. Model Six speakers, when combined with a good receiver and CD player, comprise a music system for \$500-\$600 that seriously outperforms typical pre-packaged "shelf" or "rack" systems.

Two-Way Design Advantages.

We believe that when lowest cost is not the ultimate consideration, the best speaker design is a subwoofer-satellite system like our Ensemble® and Ensemble II systems. But a properly designed subwoofer-satellite system requires three-way design, which entails the cost of two more drivers and a third cabinet. While neither Ensemble system is "high end" in price, a complete stereo system starts at about \$800, still too much for music lovers on a budget.

"...the Model Six is truly a high-quality speaker...It has an 'all there' sound quality that belies its amazingly low price and does credit to its heritage...At only \$119 each, the Model Six is an exceptional value."
-Stereo Review



Model Six continues a long tradition of best-selling, high performance, high value, two-way speakers by Henry Kloss. Very natural, accurate, wide-range sound—only \$119 each!

What does Model Six give up compared to our Ensemble systems? With big amplifiers in large rooms, Ensemble and Ensemble II can play louder, and they have greater low-bass extension. They also give you tremendous room-placement flexibility, which allows you to optimize performance, with little impact on the decor of your room.

Costly Components. Thoughtful Design.

At the heart of Model Six are its drivers, a 1 1/4" cone tweeter with center 3/8" dome (the same tweeter we use in Ensemble), and a newly-designed 8" acoustic suspension woofer. While classic in their simplicity, these drivers differ greatly from other moderate-cost speakers.

Model Six's crossover frequency is 2,000 Hz, much lower than many other two-way designs. This makes it possible to ensure smooth, uncolored upper midrange with wide dispersion. Such a low crossover frequency would not work with conventional tweeters. But Model Six's tweeter uses a suspension that allows the "long throws" necessary to reproduce music in this range.

The 8" woofer cone is larger than those usually found in speakers of Model Six's size and price, allowing it to move substantial amounts of air at low frequencies. And Model Six puts emphasis on very low frequencies instead of the mid-bass "rise" common in many speakers. The result is bass that is more accurate and extended than similar systems.

But most important is how Henry Kloss went on to "voice" the system—painstakingly

fine-tuning the octave-to-octave balance. This is the most important factor in determining the overall sound of a speaker.

Elegant Cabinet Design.

We devoted considerable time and effort to making Model Six visually appealing. Convincing simulated wood finishes were chosen—in oak, teak and black ash. A subtly rounded "bullnose" molding frames a medium charcoal grey grill that was custom-woven for Model Six.

Factory-Direct Price: \$119 each!

Because we sell factory-direct, Model Six sells for *far* less than it would cost in stores. At \$119 each, in your choice of three finishes, it is *the* value in today's loudspeaker market. If you aren't satisfied, you can return Model Six within 30 days for a full refund.

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CIRCLE NO. 6 ON READER SERVICE CARD

The Critics Love Ensemble And Ensemble II.

**IT'S NOT
TOO LATE!**
Order by Dec. 23
for Xmas delivery.

What's The Difference, Anyway?

Cambridge SoundWorks changed the audio world when we began direct-marketing Ensemble® by Henry Kloss. Ensemble is a revolutionary dual-subwoofer/satellite speaker system offering all-out performance, without cluttering up your room with huge speaker cabinets. Available *only* factory-direct from Cambridge SoundWorks, with no expensive middle-men, Ensemble is priced at hundreds less than it would have sold for in stores. *Audio* magazine says Ensemble "may be the best value in the world."

And Then There Were Two.

Now Cambridge SoundWorks has introduced Ensemble II, a more affordable version of Ensemble using only one cabinet to hold both subwoofer drivers. Ensemble II has joined Ensemble in the ranks of the country's best-selling speak-



The real difference is in the subwoofer.

ers. We believe Ensemble II is a better system than its best-known competitor. And because we sell it factory-direct, it's half the price. *Stereo Review* said "Ensemble II performs so far beyond its price and size that it can be compared only with much larger speakers at substantially higher prices." We agree with the writer who said, "It's hard to imagine going wrong with Ensemble." The question is, which Ensemble system is right for you?

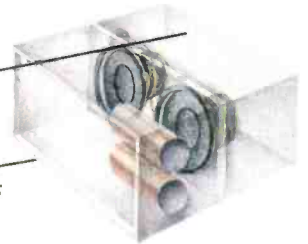
The Same Satellite Speakers.

When you listen to either Ensemble system, almost 90% of the music you hear is being reproduced by the satellite speakers. Both Ensemble and Ensemble II use satellite speakers that are virtually identical.*

Unlike many competing systems, Ensemble's satellites are true two-way speaker systems, each containing a high performance tweeter and a 4-inch woofer. *Stereo Review* said, "The Ensemble satellites delivered a smoother output than

*True acoustic
suspension,
sealed subwoofer
cavity.*

*Cavity acts as
acoustic band-pass
filter.*



"Ensemble may be the
best value in the world."
Audio



many larger and more expensive speakers."

Small (8½"×5¼"×4") and unobtrusive, they'll fit into the decor of any room. They're available in scratch-resistant gunmetal grey Nextel, or primed so you can paint them any color you wish.



Ensemble satellite speakers are available primed for painting, so they can match your decor exactly.

The Same Overall Sound.

In many rooms, Ensemble II sounds virtually the same as Ensemble, especially when Ensemble's two subwoofers are placed right next to each other. The real difference between the two systems is that Ensemble, with its two ultra-compact subwoofers (12"×21"×4½"), gives you *ultimate placement flexibility*.

The Same Attention To Detail.

Ensemble and Ensemble II are constructed with the very best materials and no-compromise workmanship. Their subwoofers use heavy-duty woofers in true acoustic suspension enclosures. The satellites are genuine two-way systems with very high quality speaker components. Individual crossover networks are

built into every cabinet for maximum wiring flexibility. Robust construction is used throughout, featuring solid MDF cabinets and solid metal grilles.

The Same Factory-Direct Savings.

Cambridge SoundWorks products are available *only* factory-direct. By eliminating the middle-men, we're able to sell Ensemble and Ensemble II for hundreds less than if they were sold in stores.

The Same 30-Day Total Satisfaction Guarantee.

Choosing a loudspeaker after a brief listen at a dealer's showroom is like deciding on a car after one quick trip around the block. So we make it possible to audition our speakers the *right way*—



Stereo systems featuring Ensemble and Ensemble II speakers with Pioneer or Philips electronics start at only \$799, including CD player. Dolby Surround Sound systems start at only \$999.

in your own home. You get to listen for hours without a salesman hovering nearby. If within 30 days you're not happy, return your speaker system for a full re-

fund. We even reimburse original UPS ground shipping charges in the continental United States.



The only difference in satellites is that the original Ensembles use gold-plated connectors that allow use of even the heaviest gauge wire.

The Real Difference: The Ultimate Placement Flexibility Of Dual Subwoofers.

Placement of bass and high-frequency speakers in a room—and how those speakers interact with the acoustics of the room—has more influence on the overall sound quality of a stereo system than just about anything. As an alternative to spending hundreds (or thousands) of dollars on this or that "latest" amplifier or CD player design, you should invest some of your time experimenting with various speaker positioning schemes. Ensemble's two ultra-slim (4½") subwoofers give you more placement flexibility than any speaker system we know of (including Ensemble II), and is most likely to provide the performance you want *in the real world...in-your room.*

How To Order.

The dual-subwoofer Ensemble system is available in two versions. With handsome black-laminate subwoofers for \$599. Or with black vinyl-clad subwoofers for \$499. Ensemble II is priced at \$399. For more information or to order call our audio experts, 24 hours a day, 365 days a year. We'll send you our 64 page color catalog with stereo and surround sound components and systems from Cambridge SoundWorks, Pioneer, Philips, Denon and others. Because we sell factory-direct, eliminating expensive middle-men, you can save hundreds of dollars.

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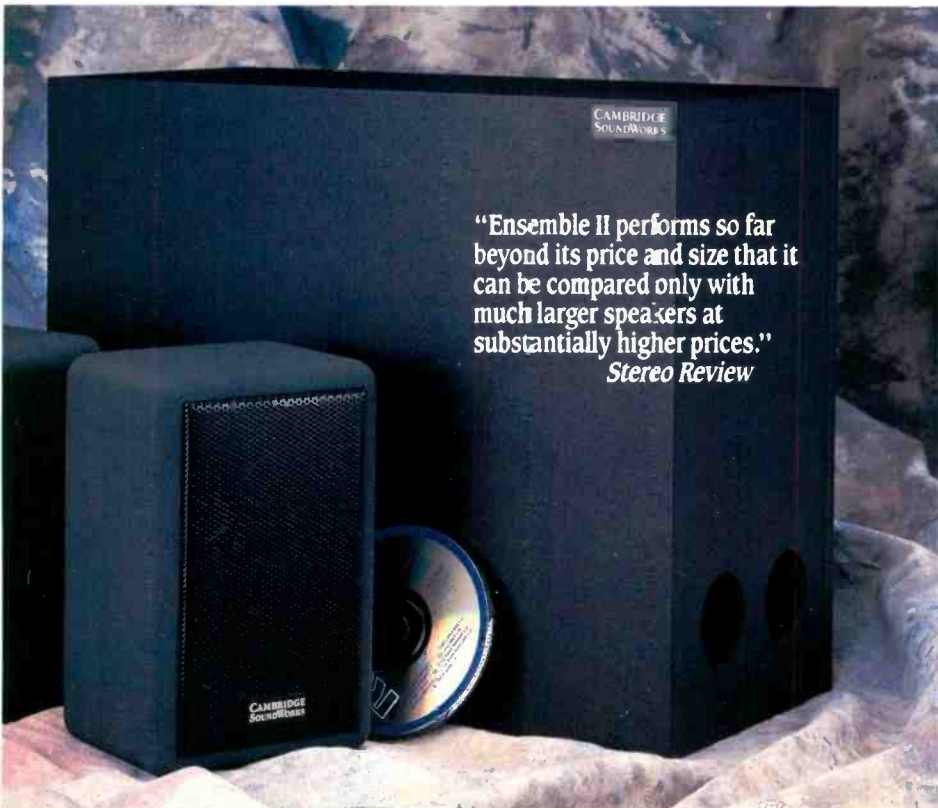
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"Ensemble II performs so far beyond its price and size that it can be compared only with much larger speakers at substantially higher prices."
Stereo Review

TEST REPORTS

MEASUREMENTS

DIGITAL AUDIO

All figures are for both CD and laserdisc except as noted.

Maximum output level	2.3 volts
Dolby calibration error (see text)	1.2 dB
Frequency response (see text)	
de-emphasis off	
20 Hz to 20 kHz +0.1, -2 dB	
de-emphasis on	
20 Hz to 20 kHz +0.08, -2 dB	
Channel separation	
125 Hz	108 dB
1 kHz	107.9 dB
16 kHz	104.3 dB
Channel imbalance	0.18 dB
Signal-to-noise ratio (A-wtd.)	
de-emphasis off	116.6 dB
de-emphasis on	116.6 dB
Dynamic range	109.5 dB
Distortion (THD + N at 0 dB)	
20 Hz to 8 kHz	<0.034%
20 kHz	7.7% (see text)
Linearity error	
-60 to -80 dB	<0.2 dB
1-dB error point	-102 dB
Defect tracking (CD only, Pierre Verany #2 test disc)	1,500 µm
Impact resistance (CD, top and sides)	A
Cueing accuracy (CD)	A
Slewing time (CD)	2.6 seconds

AFM AUDIO

All figures are for laserdisc only.

Maximum output level	
left/right	0.48/0.49 volt
Channel imbalance	1.23 dB
Signal-to-noise ratio (referred to 100% modulation, A-wtd., CX on)	72.5 dB
Distortion (THD + N at 1 kHz, 100% modulation)	0.55%
Separation (at 1 kHz)	50.4 dB

VIDEO

Horizontal luminance resolution (wedge pattern)	>350 lines
Horizontal luminance bandwidth (-3 dB)	4.6 MHz
Gray-scale nonlinearity (max)	0.8%
Laserdisc side-change time	
end of A to start of B	15.3 seconds
start of A to start of B	15.5 seconds
start of B to start of A	18.9 seconds

the two composite-video (phono-jack) and S-video outputs are at the left side. Pioneer generously provides both an optical digital audio output connector and a coaxial (phono-jack) digital output. The latter is becoming increasingly rare for reasons unrelated to its versatility, so Pioneer deserves credit for putting in the extra circuitry. There is no headphone output.

Like other members of Pioneer's Elite line, the CLD-97 is finished in a lacquer-like glossy black with polished wood end panels. Its vacuum-fluorescent display can be switched off with a small front-panel button, which in turn illuminates a tiny green LED. The display is functional but rather small, with the track-number and time digits crowded close together and no indication of when the player is in pause mode.

The supplied remote handset operates all the player's functions (the front-panel controls allow only the most basic cueing operations). It has a jog-dial/shuttle-ring combination, which is useful for controlling both laserdisc and CD playback. Unfortunately, Pioneer still includes a pointless, inconvenient, and battery-consuming illuminated on/off button for the jog dial. At the same time, the company has abandoned the logical 0 to 9 numerical keypad found on earlier models and replaced it with one of those frustrating systems that require you to press a +10 button to get to tracks numbered higher than 9. It makes even less sense when you dis-

cover that the +10 button is inoperative if you cue directly to a track time or frame number, which means that the CLD-97 interprets the same keypad in two different ways depending on the cueing function being performed. Those blemishes aside, it's a mostly well-arranged remote.

Along with batteries for the remote control, the supplied accessories include a stereo audio cable, a composite-video cable, and—wonder of wonders!—an S-video cord. (Many components with S-video outputs are not supplied with the necessary cables.) I would have been doubly thrilled if a cable for the optical digital output had been included as well (they're even rarer than S-video cables).

Technically, the CLD-97 has a lot going for it. The manual says that a good deal of the video signal processing is performed digitally, with consequent benefits in phase performance (which in video translates to color accuracy). Audio performance is enhanced by 1-bit digital-to-analog (D/A) converters. But incorporated in them is a feature that is sure to excite controversy—a technique Pioneer calls Legato Link Conversion (see "Legato Link," page 68).

Leaving aside the questions raised by Legato Link, the CLD-97's D/A converters were generally excellent. Low-level linearity was essentially perfect down to -80 dB and exceeded a 1-dB error way down at -102 dB. Our other audio measurements were equally impressive. Frequency re-





DESIGNS BY HENRY KLOSS

Our new Center Channel and Center Channel Plus speakers are magnetically shielded, so they won't cause video interference, even when placed very near a TV screen.

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Order by Dec. 23 for Xmas delivery.

Our Center Channel Speakers Deliver Optimum Pro Logic Performance At Factory-Direct Prices.

Cambridge SoundWorks sells two speakers designed by Henry Kloss specifically for use as center channel speakers in Dolby Surround Pro Logic systems—the Center Channel and Center Channel Plus. Our experience with Dolby Surround Pro Logic systems has shown that the center channel is *very* important. A significant portion of movie soundtracks is directed to the center channel. It's crucial to use a speaker that reproduces that material



accurately, with the proper volume level and dispersion pattern.

Center Channel by Henry Kloss.

Center Channel is a compact, two-way acoustic suspension speaker with a 4" woofer and a ring radiator tweeter. Because of its compact size (8½" x 5½" x 4"), it's simple to place Center Channel directly on top of or below your TV screen, so that dialog and sound effects will seem to emanate from their on-screen source.

Center Channel is well shielded magnetically so that it can be placed very close to your TV without causing video interference. Acoustically identical to our Ensemble satellite speakers, it's ideal for center channel use in a Pro Logic system. The factory-direct price of Center Channel is \$149.

Center Channel Plus by Henry Kloss.

The Center Channel Plus is a larger speaker recommended for achieving theater-like playback levels in the most sophisticated and powerful home theater systems. It uses

four 3" long-throw woofers and a tweeter that perfectly matches the acoustics of our Ensemble® and Ensemble II systems. The frequency range of the outer pair of 3" woofers is intentionally limited to maintain proper dispersion characteristics.

Because of its wide, low profile (25" wide, 4" high, 6½" deep), Center Channel Plus is ideal for placement directly on top of or, uniquely for a product of its type, *beneath* a TV—with optional support unit, it can act as a base for your TV. We don't know of any speaker, at any price, that outperforms Center Channel Plus. The factory-direct price of Center Channel Plus is \$219.

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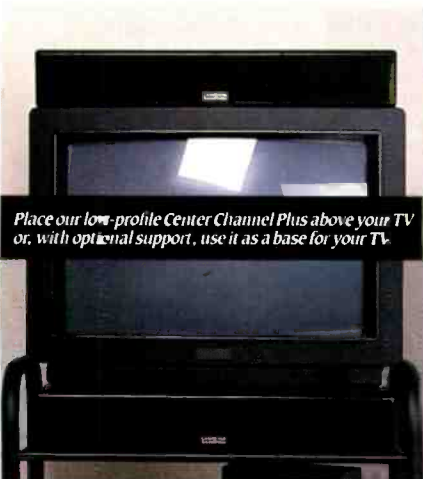
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Place our low-profile Center Channel Plus above your TV or, with optional support, use it as a base for your TV.

TEST REPORTS

sponse with de-emphasis, in particular, was very good, and noise was extremely low. Using a special dither-only test signal to keep the converters from muting, we found just a tiny amount of hum at a totally inaudible -104.7 dB. FM-audio performance for videodiscs without digital soundtracks was par for the course.

We did note that the CLD-97's output from a maximum-level digital audio signal was 1.2 dB greater than the standard 2 volts. That's inconsequential for playback of ordinary CD's, but with Dolby Surround-encoded CD's and laserdisc soundtracks, it could cause frequency-response errors in the surround channel due to mistracking of the Dolby B circuit in that channel of the surround decoder. Those errors can be exacerbated by incorrect setting of the reference level



within a Dolby Pro Logic decoder—an all-too-common circumstance. Fortunately, response accuracy is usually less critical in the surround channel than in the front channels.

Video bandwidth and, thus, resolution were excellent, and gray-scale

linearity (an indicator of fidelity in the critical black-and-white portion of the video signal) was superb, the best we have ever seen from a laserdisc player. I couldn't tell if the CLD-97's picture quality was a direct result of this unusual accuracy, but it was certainly outstanding.

The on-screen video performance does indeed justify the CLD-97's front-panel designation as a "Reference CD LD CDV Player." And its audio performance, though not the absolute best we've seen on the test bench in every respect, was very, very good overall and sounded that way. That, together with a complete range of convenience features for both CD and laserdisc playback, makes the CLD-97 a serious contender for the affections of dedicated movie and music enthusiasts. □

LEGATO LINK

The CLD-97 incorporates Pioneer's latest D/A technology, which Pioneer calls Legato Link Conversion. As explained in a white paper, Pioneer feels that the 20-kHz high-frequency limit of CD and digital laserdisc soundtracks is insufficient for music reproduction because "actual music signals and sounds in nature contain an abundance of elements above 20 kHz." Accordingly, Legato Link Conversion works "by reconstituting 'lost' frequencies [above 20 kHz] that are eliminated with existing CD player models."

The reconstitution process used in Legato Link is described in detail in neither the white paper nor the manual. But one can get some idea of what is going on by looking at the CLD-97's output as it reproduces high-frequency sine waves below 20 kHz. When reproducing a 10-kHz sine wave, for example, the player's output spectrum showed not only the 10-kHz fundamental at 0 dB, but also a 34.1-kHz tone at -42 dB, a 54.1-kHz tone at -61 dB, and a 78.2-kHz tone at -81 dB. (The digital spectrum-analyzer capability of the Audio Precision System One that I used for this test doesn't extend beyond 90 kHz, so I can't say whether the generation of ultrasonics continued to still higher frequencies.) Put a high frequency in, and you get that frequency plus several ultrasonic components out. But the added signal components are not integer (whole-number) multiples of the

fundamental, as they would normally be with sound from an acoustic musical instrument.

When I changed the input frequency—say, from 10 kHz to 18 kHz—I got a different set of ultrasonic tones (26.1 kHz, -14 dB; 62.1 kHz, -50 dB; 70.2 kHz, -57 dB). In this case, however, not only were the ultrasonic tones not integer multiples of the 18-kHz fundamental, but the lowest and strongest of them had moved *down* in frequency (from 34.1 to 26 kHz) even though the fundamental had moved *up* (from 10 to 18 kHz). That is even more unnatural: Musical-instrument harmonics do not move down as the notes go up.

So Legato Link, as realized in the CLD-97, produced an ultrasonic output that is not related to an audio-band input the way natural harmonics would be. The output was related instead to the "mirror-image" spectrum of a sampled waveform. Specifically, the loudest of the added ultrasonics actually appeared at 44.1 kHz (the CD sampling frequency) minus the frequency of the fundamental, 44.1 kHz plus the fundamental frequency, and 88.2 kHz minus the fundamental frequency. That result is what one might expect from a digital-to-analog converter system with a "leaky" output-smoothing filter, letting through some of the ultrasonic sampling artifacts that most CD players treat as sonically extraneous and remove so as not to test the dubious ultrasonic performance of components down the

line. The CLD-97's relatively strong ultrasonic output can actually give the impression that the player produces elevated high-frequency distortion, depending on how you define distortion—hence the 7-percent total harmonic distortion plus noise (THD + N) reading with a 20-kHz input, which was taken through a 22-kHz analog filter. Passing all the ultrasonic components up to 500 kHz increased the THD + N reading to 12.8 percent. Those high figures are significant, one way or the other, only if you consider the ultrasonic frequencies to be audible, however.

There was a hole in the CLD-97's output where neither fundamentals nor ultrasonics came out, centered around 22.05 kHz, half the basic CD sampling rate. I don't think it matters much what happens above 20 kHz as long as the output up there is not great enough to cause audible intermodulation distortion in your amplifier or speakers, but what happens below 20 kHz is definitely important. In that range, the CLD-97's frequency response was very flat up to 12 kHz, with a very gradual rolloff above that to -1 dB at about 17.5 kHz. That's slightly more deviation than we usually see in a CD player, but not to a significant degree. If you have very good high-frequency hearing, you might detect it on some material in a direct comparison with a player having flatter response in the top octave, but you would not find it objectionable. —D.R.

The Powered Subwoofer That Has The Audio And Video Press Jumping Out Of Their Seats.

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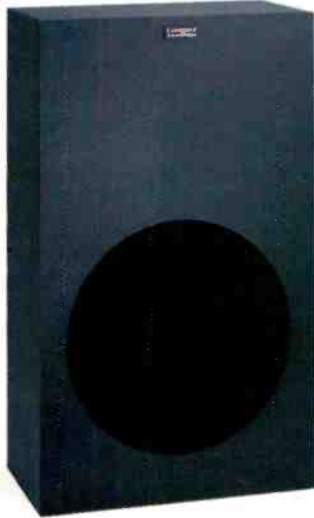
DESIGNS BY HENRY KLOSS

A jet roaring in *Top Gun*. The heavy-footed killer robot in *Robocop*. A semi hitting concrete after a 20 foot fall in *Terminator 2*. These are examples of the substantial, very low-frequency effects on the soundtracks of today's movies. Such frequencies are rare in music, and are beyond the capabilities of most speakers designed for music.

The Cambridge SoundWorks Powered Subwoofer by Henry Kloss was created to reproduce those ultra-low, ultra-strong bass signals with the power and impact you would experience in movie theaters with the very best sound systems. It's designed to *supplement* (not replace) the subwoofer(s) of Ensemble or Ensemble II. It will also work with speakers from other companies.

Remarkable bass performance.

The Powered Subwoofer consists of a heavy duty, 12 inch long-throw acoustic suspension woofer integrated with a 140



Powered Subwoofer



Slave Subwoofer

high-pass, line-level filters for the main and center amplifiers. These filters allow you to keep strong, low frequencies of sound effects out of the front speakers. These signals can cause distortion, even in speakers designed for full-range music.

The Powered Subwoofer's bass performance is simply *awesome*. It reproduces accurate bass to below 30 Hz. You'll hear soundtracks the way they were meant to be heard. In fact the bass is *better* than most

Optional "slave" subwoofer.

For all-out home theater performance, you can add our optional Slave Subwoofer, which is identical to our Powered Subwoofer except that it lacks the amplifier and controls. It uses the amplifier and controls built into the Powered Subwoofer. Amplifier output jumps from 140 to 200 watts when the Slave Subwoofer is connected.

The combination of the two speakers can reproduce a 30 Hz signal cleanly to a sound pressure level of over 100 dB in a 3,000 cubic foot room! That's enough clean, deep bass for the largest home theaters, and the most demanding listeners. The factory-direct price of the Slave Subwoofer is \$299.

No compromises. No apologies.

The combination of our Ensemble speaker system, Center Channel Plus speaker, The Surround rear/side speakers, Powered Subwoofer and Slave Subwoofer (see photo at left) creates a home theater speaker system that we believe is the best of its kind.

Although you can spend thousands more on competing systems, we don't know of *any* that outperform this \$1,999 package. If you'd like more information, a free catalog or our new booklet, "Getting The Most From Your Dolby Surround System," call our toll-free number any time.



Our Ultimate Home Theater Speaker System consists of our dual-subwoofer Ensemble system, our low profile Center Channel Plus speaker, a pair of our critically acclaimed surround speakers, The Surround, our Powered Subwoofer, our Slave Subwoofer. Factory-direct price: \$1,999.

watt amplifier—all in a high-pressure black laminate cabinet. Its control panel includes a bass level control and an 18dB per octave, four-position electronic crossover frequency selector (to match the subwoofer to your other speakers).

Additionally, an optional electronic crossover* will provide 18 dB per octave,

theaters! At the press event when we introduced our Powered Subwoofer, we had startled members of the audio and video press literally "jumping out of their seats" during demonstrations of movie soundtracks. The factory-direct price of the Powered Subwoofer is \$599.

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CIRCLE NO. 6 ON READER SERVICE CARD

TEST REPORTS



Sony CDP-CX100 CD Changer

JULIAN HIRSCH • HIRSCH-HOUCK LABORATORIES

In recent years, sales of CD changers have mushroomed to the point where they now easily outstrip those of single-play models. Some changers use removable magazines, or cartridges, that hold five or six or even ten discs, and a handful can hold more than one magazine, giving them a total playing capacity of twelve to eighteen discs. A second, more popular variety of CD changer uses a rotating carousel that holds three to six discs. There are also a couple of CD changers that hold as many as a hundred discs or so in removable magazines. Priced well above the usual range (several thousand dollars), these machines are most likely to be found in commercial installations, where they can supply uninterrupted music for extended periods of time.

Now, however, Sony has introduced a new type of large-capacity CD changer at a much more affordable price. The CDP-CX100 is a big, uncon-

ventionally shaped unit whose vertically projecting rear portion holds the CD playing mechanism. In front is a carousel into which as many as one hundred discs can be loaded vertically. Access to the nonremovable carousel, which resembles an overgrown Kodak slide carousel, is through a hinged window on top of the changer. When a disc is selected for playback, the carousel rotates it to the rear, where it is unloaded into the playing mechanism.

The CDP-CX100's front panel bears a casual resemblance to that of a full-

size receiver. Below its display window, which occupies the center of the panel, is a row of ten numbered buttons used to select discs. Along with several smaller buttons, the panel also contains a large round knob labeled Select Disc/Character with a pushbutton (Enter) in its center that serves multiple operating and programming functions.

Other, more familiar panel features include transport-control buttons, a headphone jack with adjacent volume control, a power switch, and a timer switch for unattended operation of the player via an external timer. The CDP-CX100's back panel has fixed- and variable-level analog audio output jacks, an optical digital output, and several jacks for interconnection with system remote controls.

The player's extensive programming features are operated by means of a number of front-panel buttons, with data entry via the selector knob and its Enter button. The display window provides information on the status of the system. The CDP-CX100 is an unusually versatile component, quite unlike most other audio products in the way it works. That is reflected in its operating manual, whose thirty-seven tightly packed pages fortunately leave little to the imagination. I say "fortunately" because it is unlikely that anyone could operate this changer in other than its most basic mode without careful study of the manual and hands-on practice.

Consider the basic task of identifying and locating the discs you have loaded into the one hundred slots of the carousel. The Select Disc/Character knob is used to rotate the carousel for loading or unloading a disc from any slot, and the display window might read "DISC 29," for example, to identify the slot currently in playing position. But the number of the slot tells you nothing about the disc in it.

Sony has provided a solution to this problem. The CDP-CX100 is able to store (and display) an ID of up to thirteen characters for each slot. Creating such an ID involves pressing several front-panel buttons, rotating the Select Disc/Character knob and pressing Enter for each character and space, and pressing the File button to store the information. You must repeat the entire process for each ID.

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Misconception #1: *You can use any speakers for the surround and center channels.*

The center channel is *very* important because a large portion of soundtracks is directed to the center in systems with Pro Logic. That speaker should have smooth frequency response, good power handling—and it *must* match the tonal balance of the main speakers. Also, a center channel speaker should be magnetically shielded to prevent video interference.

Surround speakers should also match the tonal balance of the front speakers. Indeed, all five speakers should have matching tonal balances for proper sound. But unlike front speakers, surround speakers should create a diffuse sound field. So the best systems with Pro Logic use "dipole radiating" surround speakers (e.g. *The Surround II* and *The Surround* speakers in our \$797 and \$1,117 packages).

All the systems on this page consist of speakers designed to match each other tonally. (Identical timbre).

Misconception #2: *Use five identical speakers in a system with Pro Logic.*

A number of companies have released speaker packages consisting of five matching mini-speakers (some with a subwoofer). This ignores the fact that the surround channels serve different purposes than the front channels.

Misconception #3: *A good home theater speaker system costs thousands and thousands of dollars.*

A number of retailers regularly sell \$10,000 Pro Logic speaker systems. This is just not necessary.

We believe that the two more expensive systems on this page compete head-on with combinations selling for *thousands* more. Add our Powered Subwoofer (\$599), and we'll compare them to anything on the market.



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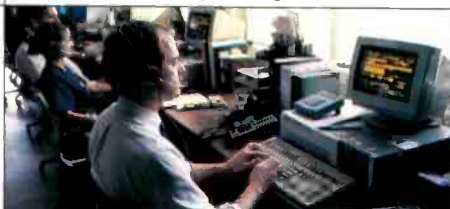
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TEST REPORTS

Once you've attached an ID to a slot in this way, it will appear in large characters on the display whenever that slot is rotated into playing position. If you identify all the slots, spinning the carousel will flash the identifier for each one as it passes—surely a very convenient system once you have done the work of entering the data. The memory (which is nonvolatile but can be edited or deleted) applies only to the slots, not to the discs within them. If you change a disc without changing the stored data for its slot, the display will show an incorrect ID.

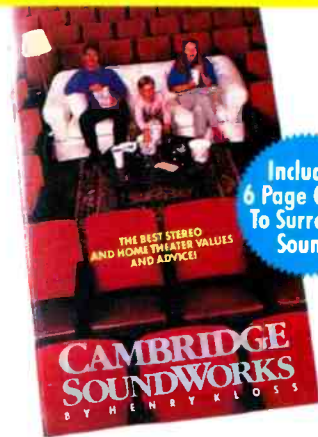
The CDP-CX100 also has a full complement of programming modes and memories for special playback requirements. It can be set to play any desired sequence of discs and tracks or to omit any specified tracks from a playing sequence. A random-play (shuffle) mode can be applied to the tracks on a disc or to the order of the discs themselves, and each CD can be individually keyed for automatic setting of its playback level to compensate for variations in recording characteristics from disc to disc.

An interesting and unique capability of the CDP-CX100 is its Group File feature, which enables you to group your discs according to ten categories of your choice, such as the type of music (rock, pop, classical, jazz, etc.), the orchestra or conductor, composer, and so forth. Each group can comprise as many as a hundred discs (although a group that large, containing every disc in the carousel, would be sort of pointless), and the groups are nonexclusive, meaning that you can put a particular disc in as many groups as you like—all ten, if you want. You can name the groups and store each one in its own file, then, by pressing its numbered button, call up an entire group for replay, either in the assigned order or shuffled. Calling a group displays its assigned name (up to eleven characters) in the panel window.

Sony provides a remote control with the CDP-CX100 that incorporates all its essential control features in one of the least cluttered handsets we have seen in some time. Its jog dial is the functional equivalent of the Select Disc/Character control on the player's front panel. It also has well-spaced, clearly marked buttons.

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MEASUREMENTS

Maximum output level	1.97 volts
Frequency response	
..... 20 Hz to 20 kHz +0.03, -0.18 dB	
Channel separation	
100 Hz	127 dB
1 kHz	119 dB
20 kHz	93 dB
Dynamic range	98 dB
Quantization noise	-95 dB
Distortion (THD + N)	
1 kHz (-80 to -10 dB)	<0.0015%
20 Hz to 20 kHz (0 dB)	<0.0025%
Linearity error (at -90 dB)	<0.5 dB
Maximum interchannel phase shift	
(at 20 kHz)	0.85 degree
Defect tracking	
(Pierre Verany #2 test disc)	1,250 μ m
Impact resistance	
top	B
sides	A
Cueing time (track-to-track)	<3 seconds
Disc-change time	13 to 19 seconds

Clearly, the CDP-CX100 is one of the most feature-laden CD players available. Our test sample, a preproduction unit, was accompanied by a close-to-final version of its instruction manual, sufficient to enable us to evaluate its features and performance. There was little specific information on its circuitry, but enough technical specifications to make it clear that its performance is intended to match its versatility. The ratings included a frequency response of 20 Hz to 20 kHz \pm 0.3 dB, signal-to-noise ratio (S/N) greater than 115 dB, dynamic range greater than 100 dB, and distortion less than 0.002 percent. Even by CD-

player standards, those are remarkable figures!

Our measurements generally confirmed both the operating features and the electrical performance of the CDP-CX100. The frequency response, for example, was \pm 0.03 dB from 8 Hz to 8 kHz, falling to -0.18 dB at 20 kHz. Channel separation was truly exceptional, and distortion was utterly negligible—about 0.0015 percent at levels below -10 dB and 0.0025 percent at 0 dB. At 0 dB (the maximum recorded signal level), it was 0.0025 percent from 20 Hz to 6 kHz, falling to 0.0015 percent at 20 kHz. The low-level linearity of the digital-to-analog converters was also excellent, as were noise and dynamic-range figures.

The CDP-CX100's ability to deal with gaps in a disc's information layer was good, though not exceptional. It was able to track through 1,250-micrometer gaps, but not through 1,500 micrometers. The typical cueing time, between tracks at the beginning and end of a disc, was less than 3 seconds. Disc-change time depended somewhat on the discs' relative positions in the carousel. Between adjacent discs, some 13 seconds elapsed during the change, but a shift from Slot 1 to Slot 50 (or vice versa), which requires the carousel to rotate 180 degrees, plus the transfers of the two discs between their playing and storage positions, required 19 seconds.

The CDP-CX100 is not only large but also relatively heavy for a CD player. That may have something to do with its stability and resistance to impacts. Unlike most CD players, which can easily mistrack if handled roughly, the CDP-CX100 withstood the hardest slaps I dared give its side panels without audible mistracking. It was not quite so immune to top impacts, although I cannot imagine those occurring in any normal use.

All told, the Sony CDP-CX100 is a very impressive product—not particularly handsome as hi-fi components go, but offering an amazing combination of features and performance at what must be considered a bargain price (about half what I'd originally guessed). It does more, perhaps, than some of us would find useful, but everything is available at the touch of a button, with the bonus of true state-of-the-art performance. □

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THE LOWDOWN ON BY EDWARD J. FOSTER SUBWOOFERS

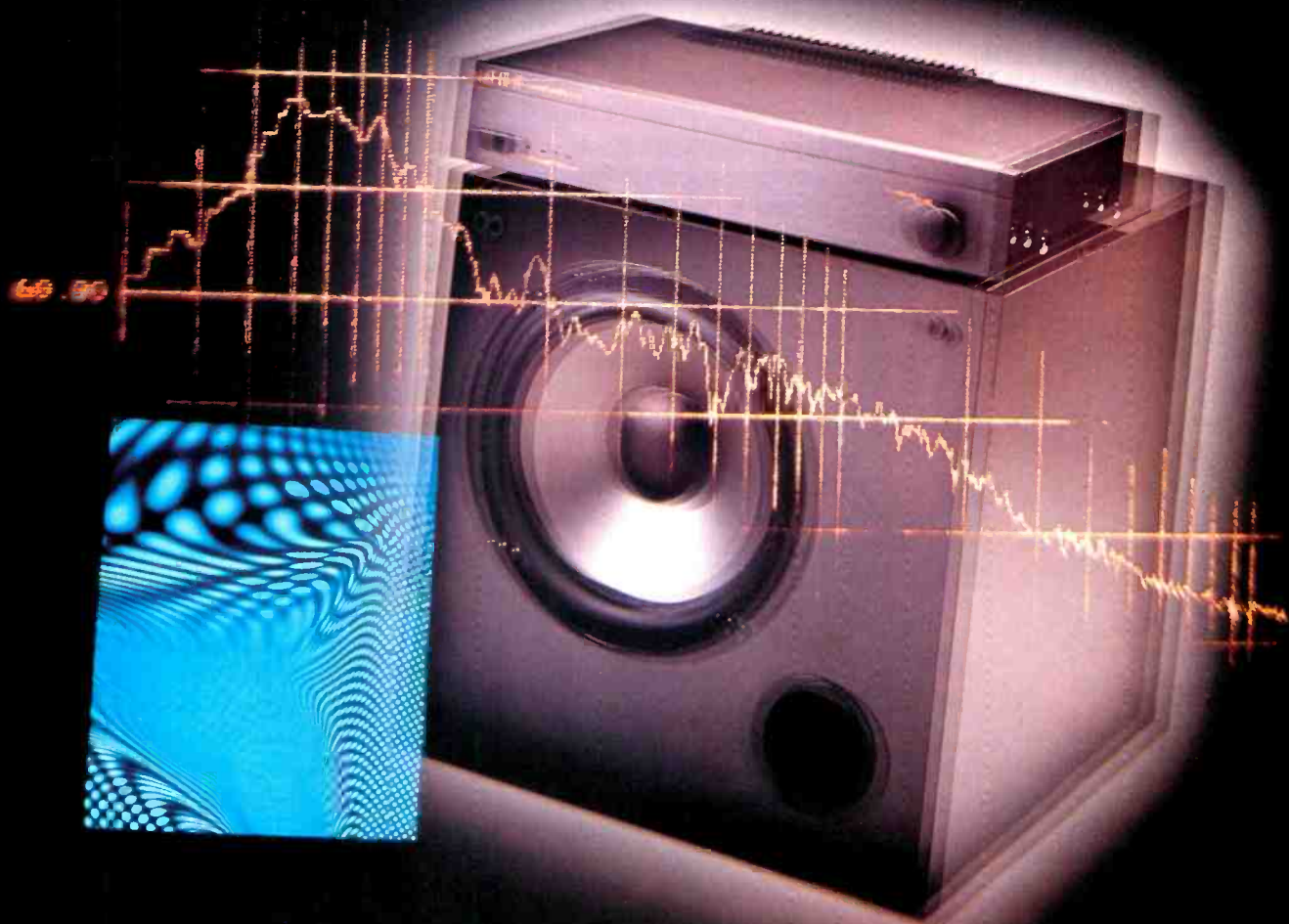
What you need to know about selecting a bass box

When I was a kid, back when dinosaurs roamed free and were not confined to Jurassic Park, I read a "how-to" article in an electronics magazine on using basement joists to create a speaker enclosure. The idea was to seal the joists with a sheet of plywood, block off both ends, mount the speaker at one end, and cut a hole in the floor above the other end. Sound emerged from a heating register mounted in the hole. The contrivance was essentially a crude organ pipe that was

used to reinforce the speaker's bass output. It wasn't called a subwoofer (I don't think the term had yet been coined), but that's what it was.

Fortunately, today you don't have to be a carpenter if you want to shore up the bass performance of your hi-fi or A/V system. The runaway popularity of home theater and the widespread acceptance of three-piece subwoofer/satellite speaker systems have triggered an explosion of stand-alone

PHOTO BY DENNIS POTOVAR



The Real World

Maybe you've wondered as you've read this column over the years just what kind of systems the writers themselves own. If you envision huge tower speakers in dedicated rooms with tube traps and Sonex walls, think again. Most of us face the same real-world constraints you do. Take me, for example.

I don't believe in living rooms you can't live in. After stuffing myself and all I own into New York apartments for twelve years, I'd never devote an entire room to furniture I wouldn't dare sit on. So when I bought a house in the suburbs last year, there was no question that my most used and valued possession, the audio/video system, would go in the room I'd spend the most time in—the living room.

Trouble is, as wonderful as this spacious 20-x-25-foot room is to an ex-Manhattanite, the vaulted ceilings, large windows, and strangely placed fireplace spell bad news for stereo listening. Since there was really only one place the front speakers could go, one place the equipment rack and TV could go, and one place the sofa could go, I was left with one alternative: compromise.

Prior to the move, I had chosen my components (constantly subject to change) according to musical and home theater considerations. My Yamaha DSP-A1000 integrated amp provides the requisite equal power across the front three channels—80 watts apiece in this case—for Dolby Pro Logic, and each of the surrounds gets 25 watts. All five speakers are Triad System Seven satellites, which is good for timbral consistency, but the triangular positioning of the front three alters the soundstage. As I said, compromise.

The System Sevens are supplemented with a Triad Thunder powered subwoofer. Triad recommended using two smaller subs, but this was my living room, after all, and I chose to use one big Thunder (it ended up next to the component rack). Anyway, with its mica top, it was the best-looking sub I'd ever seen. The front left and right speakers rest on Triad stands on either side of the fireplace (one has to be moved over about a foot when there's a fire). The wires go through the stands and then run unobtrusively along the base of the walls and the hearth.

Finding a home for the surround speakers

was a real challenge. Since I didn't want wires running across the floor, I decided to mount them on a ceiling beam. But drilling holes in a main support beam while standing on a 12-foot ladder was more than I could deal with, so I called in a specialist, Bob Bourdeau, from Audio/Video Systems in Tappan, New York. Maybe I should say perfectionist: It took him 5 hours to complete the job to his satisfaction.

We decided to aim the surrounds down toward the stuccoed back wall to diffuse their sound. To keep the wiring clean, Bourdeau ran one cable with four 18-gauge conductors up along the top edge of the wall and fireplace to the beam, where he split it into two pairs, one for each speaker. His work is nearly invisible.

Bourdeau's next move was to fine-tune the picture of my 27-inch Sony TV using Reference Recordings' "A Video Standard" laserdisc. Then, using Lucasfilm's powerful "Wow" laserdisc as a reference, he adjusted the levels for all five audio channels. "All those little extra steps add up," he said. "That's the difference between an okay system and one that makes you say, 'Wow, this is great!'" To hit the levels Lucasfilm recommends for theatrical realism, though, I have to crank the volume knob *way up*. I may have to invite the neighbors.

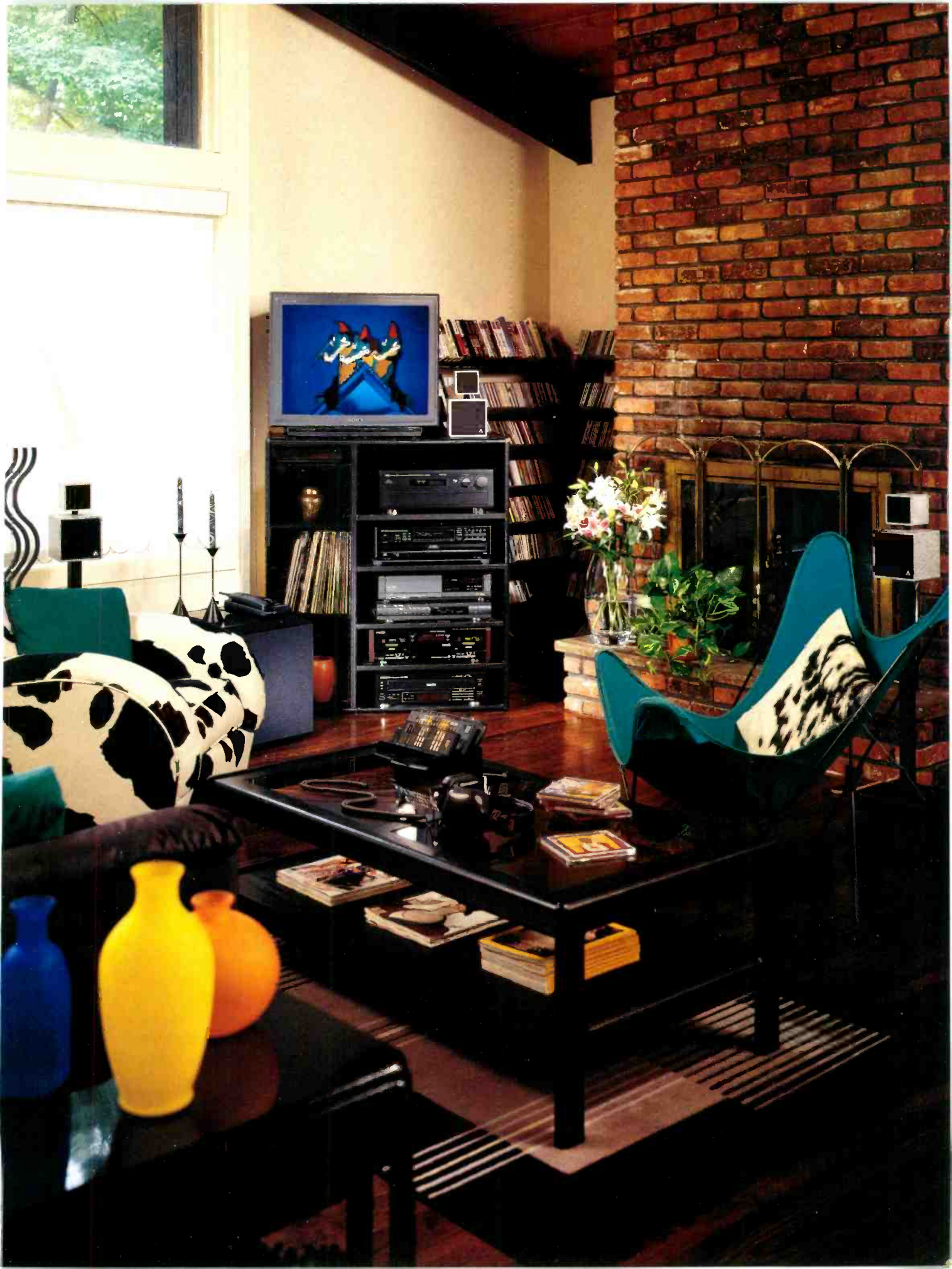
In addition to the Yamaha amp, my component stack includes an Onkyo Integra DX-C606 six-disc carousel CD changer, a JVC HR-S5000U Super VHS VCR, a Harman Kardon TU9600 AM/FM tuner, a Sony TC-WR901ES Dolby S cassette deck, and a Pioneer CLD-2080 combi-player for laserdiscs. Everything plugs into a Radio Shack current-sensing power switch so I can power up the system by hitting one key on my remote.

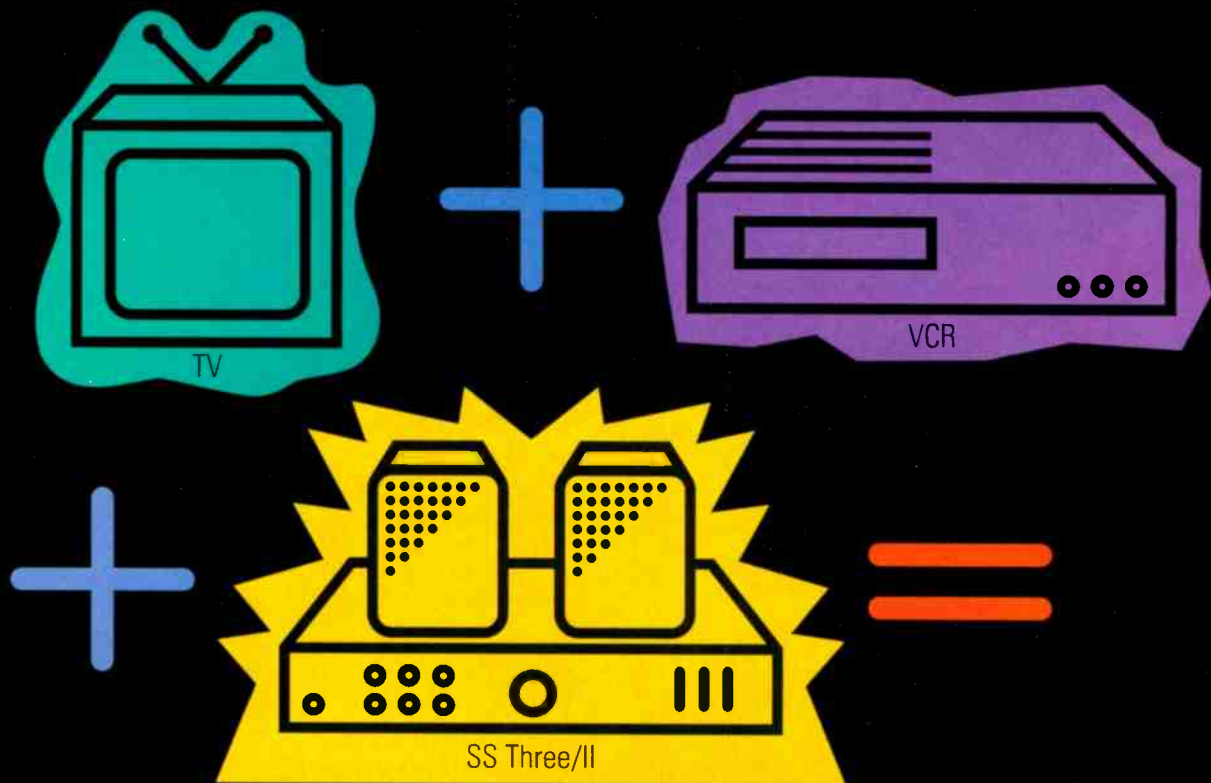
The components are housed in a *custom* Custom Woodwork & Design cabinet, which the company built to my odd specs. It matches my CWD black oak coffee table and the Leslie Dame CD and tape storage racks in the peculiar space behind the equipment.

I like to have music everywhere, so I opted for a pair of Recoton wireless speakers, which I take wherever I want music—even on the patio. I also added a Terk Leapfrog remote-control extender. And I'm already plotting my next project, although it won't be for a few years—when HDTV's wide screen demands a different space. Then I guess it will be down to the basement. Or maybe I'll have to find another house.

—Rebecca Day







[Home Theater]

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2028: THE STATE OF THE ART



ILLUSTRATIONS BY TERRY ALLEN

The year is 2028. George Jetson is on the \$50,000 bill. Well-dressed business executives wear stretch jumpsuits and owl-feather capes. Of course, their heads are shaved and painted blue. Animal-rights activist groups have persuaded a confused Congress to grant U.S. citizenship to all mammals; dogs can vote at age three and begin receiving social security benefits at age nine. A magazine formerly known as STEREO REVIEW is celebrating its seventieth anniversary. The magazine, now called *Uncle Loud's CyberSonic Theater of the Mind*, is very different from the way it was before the turn of the last century. Audio is very different. Everything is very different.

Way back in the 1990's, when people started talking about information superhighways, they envisioned a telecommunications network that would link homes, businesses, universities, and governments. They believed that such a system would promote access to goods and services, elevate entertainment, stimulate education, and generally help everything run smoothly. And they were right—we did get all of those benefits, but in ways that no one could have foreseen.

Today, in 2028, everyone is wired up, jacked in, on line, and logged on to The Net—an interplanetary telecommunications system that provides a link between all citizens and all databases. Everything from kindergarten classes to porno films, from piano sonatas to reports on sunspot activity, is centrally stored in regional government and corporate databases, and is digitally transmitted via satellite across The Net. Our houses, our cars, and our personal digital assistants (PDA's)—all are plugged into The Net. Thanks to wide-bandwidth channels and powerful data-compression systems, information flows at the astounding rate of 100 gigabytes (100 billion bytes) per second. The Net stores the accumulation of the human experience, it ties together our present, and it guides our future. We owe everything to The Net.

70
1958-2028

BY KEN C. POHLMANN

During your commute to work, while your electric car is towed by the cold-fusion tractor along with two thousand other cars, you always read *Uncle Loud's*. Today's issue contains more than 100 gigabytes of information, instructions, warnings, and advertisements for the music lover. You log on to *Uncle Loud's* and, as always, you check the crime report first. Information is the world's most valuable commodity, and info-thieves around the world are constantly attacking The Net. Throw in the info-terrorists, info-hijackers, virus geeks, and jack junkies, and you've really got your hands full. Good thing the government keeps careful watch over The Net—every keystroke of every legitimate user is monitored and recorded by the Baud Police.

Anyway, *Uncle Loud* himself, a computer-generated sumo wrestler wearing his trademark argyle socks, appears on your dashboard in a squatting position—full-color, three-dimensional, and sweatier than usual this morning. There's been another break-in at the AT&T world headquarters in Tokyo. Info-terrorists have sabotaged the mask set for the fifth-generation VR (virtual reality) chip set. At *Uncle's* invitation, you flip on your own VR projector to take a closer look. The car windows go opaque, and suddenly you are inside AT&T's VR lab, where the chief scientist is explaining how the terrorists penetrated the lab's security system. She beckons to you and an AT&T logo appears, indicating that you will be billed for the rest of the program, then she dumps you down into a cyberspace of the chip set's mask. She guides you through the submicron lattice, pointing out links created and destroyed by the terrorists. Even to your uneducated eye (you dropped out after your doctoral work) it looks like a mess. You sign off, shaking your head, remembering the time you were mistakenly packed in ice and shipped to Greenland—some hacker's joke.

Back at The Net's main menu, you call up a real-time cyberspace of the Grand Canyon North Rim. You are immersed in a wilderness panorama so real that you wish you didn't have to go to work. You meander along Bright Angel trail at sunrise, marveling at the canyon's awesome sights and natural sounds: a distant waterfall, wind in the trees, a flock of Canadian geese flying overhead . . . Time to sign off—you



don't want to be late to work *again*. You are billed by the National Park Service.

Detaching from the tractor, you decide to pedal the rest of the way to work, a regional music store owned by AT&T. You surrender your regulation sidearm to Scion, the security robot, and walk through the lobby, past the bulletproof windows that protect the music data library. You enter your office and log on. Overnight sales were quite healthy. Brutal Meat's new classical release did particularly well thanks to their live concert in Kenya last night. Over 215 million households tuned into the event, which was sent out free over The Net. After watching the concert, 40.2 million users sampled the new album over The Net. Since your record store distributes all Brutal Meat files through the northwestern sector, the access fees should top \$87.2 million—not a bad night's take for a record shop.

The only authentic record shops left are the ones found in real-world nostalgia arcades—you can even buy antique compact discs in some of them. Of course, only a few collectors still have the players to play them on. Everyone else uses The Net. You can request almost every piece of music ever recorded, or any live music as it is being performed, either free (for promotional purposes) or by paying an access fee. That's how people enjoy music—they simply log on to the world library of music, continuously available to everyone on The Net. All

you have to do is put on your Nippers—combination wireless eyeglasses/earphones that reproduce the audio and video program *and* correct for the severe myopia and hearing loss now affecting most of the population following the Great Broccoli Problem of 1994. It's hard to believe that people once felt compelled to collect personal copies of mass-produced recordings. They actually got into gasoline-powered vehicles and drove to special stores, paid hard cash for shiny discs, took them home, listened to them using special equipment, and then stored them. Amazing.

Of course, no one (except those eccentric compact disc collectors) listens only to music anymore. Today, all music is accompanied by visuals of some sort. In fact, most albums offer several choices of accompanying video. If you don't like one, choose another. If you don't like any of them, you can cross-link to other video libraries and adapt something else to the music. The last time you checked, The Net had 18,268 recordings of Beethoven's Ninth Symphony, with a total of 54,189 possible video accompaniments. Screamin' Marvin's Chicago Symphony Orchestra, conducted by Zeus 103-Z, has 87 recordings of the Ninth, for example. Three videos are offered with Version 39, but any of the other 54,186 can be adapted automatically. If all else fails, you can always create your own video.

For that matter, serious music lovers produce their own music anyway. Every school kid knows how to set a musical mood, skip over the boring parts and add exciting new ones, re-orchestrate, add instrumental or vocal solos, jam along with their own instruments, and otherwise direct musical events to their liking. Most albums contain alternate material and programs that let you interact with the music and modify it. Stand-alone customization programs, called Tinker Toys, are also extremely popular. Of course, devout aficionados draw on raw material to compose their own music. Either way, music is always accompanied by blendo elements such as poetry, scanned images, computer graphics and animation, and video—all orchestrated to produce a highly personal, highly emotional experience. It's hard to imagine people just sitting around listening to music—as our grandparents used to do—trying to

figure out someone else's artistic expression.

You log on to *Uncle Loud's* again—hey, it's part of your job. You flip on your VR projector and browse through some of the ads, sitting back as salespeople politely knock, then walk into your office. Most of them hawk the typical junk—PDA's, inflatable Nippers, VR projectors, satellite-dish hats, FLAD's (Four Letter Acronym Decoders). Then something interesting catches your eye—a new feelie projector. You nudge your Live button and the virtual saleslady program is replaced by a real telepresence saleslady. From her office in New Delhi she explains that in the same way that traditional VR devices emulate sight and sound, a feelie program emulates the sense of touch.

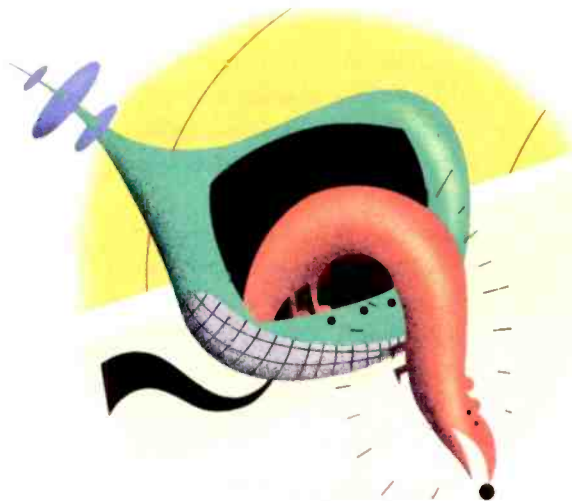
She demonstrates by handing you a chinchilla wearing a "Vote for Habib" campaign button. You reach into the interspatial fog and take the squirming animal into your arms. Unlike the ethereal quality of other virtual images, this one appears to have weight and substance—you stroke the chattering critter's soft fur. Suddenly, it bites you on the finger. The saleslady laughs, and the animal disappears. No blood, thank The Net. Hmmm. There are definite possibilities for feelie technology in the music business. Brutal Meat and other computer-generated virtual orchestras that exist only electronically could be given much better telepresence. Fans could shake players' hands, hold their instruments—that sort of thing.

You switch to *Uncle's* chat line to talk with other music enthusiasts. You enter the cyberchat room—today, for some reason, it's decorated like the forward stateroom on the *SS Titanic*. A small group of men and women are discussing the sound quality of personal digital assistants. Primitive PDA's first appeared back in the 1990's, when they provided wireless two-way communication of voice and data from a pocket-size device. Today's PDA's are far more sophisticated. Not only do they connect you to The Net, but they can be used to access music libraries from any location and they have built-in aural and video projectors that transmit data to your Nippers. Thanks to holographic processing—which uses eighteen discrete channels—the sound is really quite nice, and the video display is pretty good too. Still,

there is considerable debate over which PDA auto-imaging system is really the best.

All aural projection systems—or any audio hardware, for that matter—must adhere to stringent standards set by the International Cybersonic Standards Committee. Frequency response, distortion, low-level linearity, dynamic range, and signal-to-noise ratio must all be perfect—PDA's found to have substandard projectors are packed on the next Trash Titan and sent to IGO (Interplanetary Garbage Outpost). In addition, all aural projectors must be calibrated so that each of the eighteen channels is properly placed in the three-dimensional space around the listener. You do have an option, however. You can set the imaging so that the soundstage follows you around—when you turn left, it turns left, for example. Or you can engage the auto-imaging program so that the soundstage remains fixed regardless of your position.

Anyway, today's hot question is about auto-imaging chips. Which audio giant's chip has better tracking, Motorola's or Fujitsu's? You listen for a few minutes, then butt in: "I've always preferred Motorola's auto-imaging, and besides, *Uncle Loud's* auto-imaging reviewers, specially chosen because of their susceptibility to motion sickness, agree on Motorola." Suddenly, there's a rumble, and people are thrown off balance. Someone shouts that *Uncle* has programmed an iceberg into the *Titanic* program. Your monitor flashes red—an info-theft is in progress! Sea water rushes into the cyberspace and people are thrashing about, generally enjoying themselves.



But amid the confusion, the thieves are undoubtedly looting all accounts that are logged on. You send out an intruder warning and run from the stateroom, signing off. The intruder alert fades from your screen as your legal program automatically sends a notice to *Uncle Loud's*—the publisher is liable for any losses incurred during an info-raid.

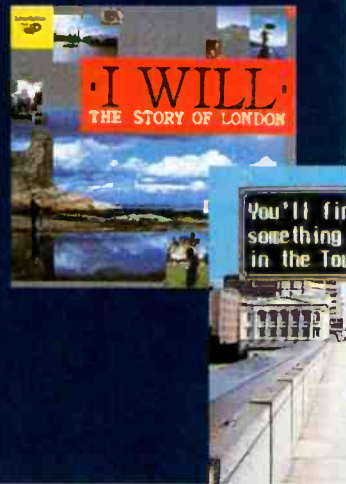
You arrive back at your house just as the family that lives there in the daytime is leaving. As always, they have thoughtfully left the laser rifles fully charged and warm to the touch. As always, the dinner paste is bland and tasteless, greasy rain rolls down your window pane, and you are alone. As always, you turn to The Net. Restlessly surfing from one arena to another, you finally enter the InfoZone and settle on the Music SubZone. The SubZone holds every book and magazine article ever written about music, every published musical score, as well as 12 million record reviews—all hyperlinked.

You open a book on Brahms and start reading about his Piano Quintet in F Minor—the first movement is described as symphonic, tragic, and impassioned. You call up the score, paging through it, then access a music library and overlay an old 1993 recording, adding the instruments one by one. You orchestrate the piece, fulfilling its symphonic potential, then quickly annex a video program and photographs of you as a young man. You walk through your home, through the orchestra itself, listening intently to each instrument, examining each visual display as an object of art. The technologically amplified emotion is too much—you fall back into your chair, weeping, as the music plays.

Hours pass. You pull yourself together, abandoning the video and lowering the volume of the music. You log on to today's *Uncle Loud's* one last time—tomorrow's edition is only minutes away. Hmmm, a farewell article from Ken Pohlmann. He's leaving the magazine to pursue chinchilla ranching. Good riddance. You start reading his article, which looks ahead to the future of cybersonics—very pedantic stuff. Yawning, you fall asleep. Moments later, thousands of miles away, a vigilant computer notes the pause in your keystrokes and signs you off The Net. □

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EQ

A practical guide to equalizers and equalization

REVIEW

Audio Control's C-101 Series III ten-band graphic equalizer (\$459) features sliders that are grouped in channel pairs, a generous 15-dB boost/cut range, and an infrasonic filter. A microphone is supplied for use with its built-in pink-noise generator and spectrum analyzer.



Equalize: to make equal. An equalizer could be defined as a device that makes the response of an audio system equal at all frequencies, yielding a perfectly even tonal balance from top to bottom. That is one function an equalizer can perform. On the other hand, an equalizer's ability to modify the response at many frequencies makes it an exceptionally flexible tone control, capable of producing an almost limitless range of spectral unevennesses on demand. The result may be sound that suits your taste, or it may just be ninety-nine varieties of bad sound. Because they can have such a powerful sonic effect, equalizers are popular system add-ons. How happy you are with one will depend not only on its design, however, but also on how you use it and what you expect to achieve in the process.

In an ideal world, equalization would never be necessary: Your playback system would provide totally accurate reproduction, and every recording on your shelf would be properly balanced. In the real world, of course, every speaker in a hi-fi store sounds different from every other. And the speakers that you liked best in the store sounded different when you got them home, because of the different room acoustics. An equalizer might help.

Equalizers are built into most studio consoles and are used every day to tailor recordings to sound good on the studio's monitor speakers. Studio monitors are not all alike, and record-

ings from different labels may sound quite different. You may try to ignore these differences, or you can use tone controls and equalizers to ameliorate the differences and try to achieve a more lifelike tonal balance from each recording.

Equalizer Basics

Equalizers span a wide range of complexity and cost. The most popular variety is the *graphic equalizer*, which divides the audio range into a number of frequency bands, with a slider for each one to adjust the amount of boost or cut relative to the levels in the other bands. The sliders are mounted in parallel on the front panel so that their positions resemble points on a frequency-response graph. Some graphic equalizers even have a glowing LED in each slider, displaying a highly visible approximation of the response curve that the equalizer is imposing on the incoming signal.

Recent designs often substitute up/down pushbuttons for the sliders. This approach sacrifices one convenience (graphical control arrays) in favor of another (the ability to store EQ settings in memory for instant recall). In some equalizers a single set of controls adjusts both channels. That's handy for flexible day-to-day tone control, but if you want to compensate for room effects or correct problems in home-recorded tapes, you may have to make different adjustments in the two channels and therefore need separate controls.

Many equalizers now incorporate real-time spectrum analyzers (RTA's) that display the strength of the signal in each of the equalizer's frequency bands. This display can be remarkably educational, if only because it teaches you the true frequencies of musical sounds. You may think that 1 kHz is the middle of the audio spectrum, but middle C on the piano (and the middle of the male vocal range) is two octaves lower, around 250 Hz. The energy in a high-pitched trumpet note or soprano voice typically peaks between 1 and 2 kHz. Above 2 kHz you'll find a few very high-pitched sounds, such as piccolo and cymbals, but mainly this range contains the relatively weak harmonic overtones of midrange notes. Small EQ adjustments in the range between 2 and 6 kHz can produce dramatic changes in the subjective brightness of the sound.

Bandwidth Bugaboos

Equalizers may have from as few as three to as many as thirty control bands. The most popular variety divides the audio spectrum into ten equal bands, each spanning one octave. (Each doubling of frequency constitutes an octave: 200 to 400 Hz, 400 to 800 Hz, etc.) Generally, the first octave extends from about 20 to 40 Hz, centered at 30 Hz; the second octave extends from 40 to 80 Hz, centered at about 60 Hz; and so on up to the tenth octave, ranging from about 10 to 20 kHz, centered at about 15 kHz.

PHOTO BY LOOK P. LEUNG

BY PETER W. MITCHELL



Rane's Home THX-certified THX44 equalizer (\$1,299) boasts an eleven-band graphic-control grouping (80 to 800 Hz) and two high-frequency parametric bands apiece for the left, center, and right front channels. Two low-frequency parametric bands are on tap for the subwoofer channel.



MTX Soundcraftsmen's E440PRO twenty-one-band graphic equalizer (\$549) has one-third-octave spacing from 40 Hz to 1 kHz and variable spacing from 1 kHz to 16 kHz; the boost/cut range is 15 dB per band. Its C-MOS switches are said to reduce noise and distortion.

BOOSTS AND CUTS: AN EQ CHECKLIST

DO

- Think about whether your needs will be met better by a conventional variable-Q graphic equalizer or by an equalizer that can provide narrower corrections.
- Consider whether you prefer separate controls for the left and right channels or a single set of controls that affects both channels equally.
- Use an equalizer for ear-training. Unless it has a remote control, place it near your listening chair (using long cables) and observe the effects of each control on various musical sounds, adjusting one band at a time.
- Compensate for the spillover of adjustments made in one band into adjacent bands by adding small corrections in the opposite direction on either side.
- Take care when applying large boosts at the ends of the frequency spectrum (above 10 kHz or below 40 Hz), particularly with bass-reflex woofers. While attempting to enhance the top and bottom octaves of the audible spectrum you may also boost speaker-damaging infrasonic and ultrasonic signals.

DON'T

- Assume that equalization is the first and best way to deal with speaker/room interactions. In most cases it should be the last resort. Experiment first with speaker placement, listener location, and sound-absorbing materials.
- Be scared away from equalizers by claims that their phase shift alters the waveform. Most frequency-response errors are accompanied by phase shift, and corrections that improve frequency response may improve the phase response at the same time. In any case, human hearing is remarkably insensitive to phase shift within a channel, so it seldom matters anyway.
- Assume that the inclusion of a spectrum analyzer, pink-noise generator, and measuring microphone means that an octave-band equalizer can correct for room acoustics (standing waves, floor reflections, and so forth). Even partial success at this task requires the narrow control bands of a parametric or one-third-octave equalizer. Doing the job really well may require digital signal processing (DSP).

Constant Q. In engineering parlance, the letter Q represents the sharpness, or bandwidth, of a filter. The majority of equalizers are "variable-Q" devices: The effective bandwidth of each control becomes progressively narrower as you increase the amount of boost or cut. A "constant-Q" equalizer contains a different type of circuitry, consisting of a large number of narrow-band filters, all wired in parallel, and the slider controls simply vary the signal level in each band. As a result, each band maintains approximately the same bandwidth at all boost/cut settings.

This is a difference in circuitry but not in external appearance or control function. On the outside, a constant-Q equalizer looks the same as a variable-Q model. It may be a graphic equalizer with vertical sliders, it may have rotary control knobs, or it may be equipped with up/down pushbuttons and memories for favorite EQ curves. In any case, because a constant-Q equalizer can keep its bandwidth narrow while providing a boost or cut of only a few decibels, it is particularly useful for correcting loudspeaker imperfections and room acoustics.

Sub-octave EQ. Irregularities caused by speaker resonances, standing waves, and floor reflections are usually much narrower than an octave. Octave-band equalizers are inexpensive and popular, and they are admirably versatile as tone controls, but when audio professionals need to provide speaker/room response correction for a recording studio, a movie theater, or an audiophile system, they usually specify equalizers that operate in half-octave or one-third-octave bands. And since it's impractical to adjust twenty or thirty bands in each channel by ear alone, a spectrum analyzer with the same resolution is used to measure the response of speaker and room.

Figure 4 illustrates the sort of correction that a one-third-octave equalizer can provide. It shows the effect of boosting the 1-kHz band on an Earthquake Sound EQ-3200, a thirty-band equalizer made for automotive use. It has rotary knobs instead of slider controls and runs on 12 volts DC instead of 120 volts AC, but in other respects it performs like many one-third-octave equalizers designed for home use. Two settings are shown: +5 dB and maximum boost (nominally 12 dB). Compare these curves with those in Figure 1: The correction is much narrower, even though the EQ-3200 is a variable-Q equalizer. For even more precise corrections, you could use a



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.



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THE DIGITAL ADVANTAGE

In the climax of Orson Welles's 1948 film *The Lady from Shanghai*, the villain follows Rita Hayworth into a hall of mirrors. Suddenly he sees her—everywhere he looks. In some directions he sees multiple images of her as reflections cascade back and forth between mirrors.

Similarly, the boundary surfaces of your listening room produce multiple reflected images of every sound. For every direct sound from a loudspeaker, a secondary acoustic image is produced by a reflection off the adjacent side wall. A distorted image is formed by the reflection off the floor, another off the ceiling, one off the wall behind the speaker, and so on.

Because of the Haas (or "precedence") effect, you don't hear these reflections as distinct sounds. The human brain contains a neural network that uses the direct, first-arrival soundwave to establish the direction of the entire sound; reflections that arrive during the next 40 milliseconds alter the perceived timbre. Try listening to your loudspeakers outdoors. In the absence of reflections, they will sound quite different.

You can reduce the strength of room reflections at middle and high frequencies by placing sound-absorbing materials at mirror-image locations on the walls, floor, and ceiling. And you can reduce the effect of standing waves by placing the speakers and your chair at optimum locations. But significant reflections and standing waves will remain, particularly at low frequencies where absorbing materials have little effect.

The fundamental problem of speaker/room interaction is that it is time-dependent. Reflections are spread out over a period of many milliseconds after each direct wave, and standing-wave patterns

build up in the room as the woofer's output reflects back and forth between the walls. Each of these contributions (direct wave, early reflections, and standing waves) has a different influence on the sound you hear. But a conventional equalizer affects all of these contributions in the same way.

A decade ago, engineers at Acoustic Research devised a way in which adaptive digital filters could operate in both the frequency and time domains to equalize direct and reflected sounds separately. Advances in the speed and power of computer chips have now transmuted this concept from theory into the realm of real products. Digital signal processors for speaker/room correction were initially developed for recording studios by SigTech (a spinoff from AR), and now living-room versions have been developed (or are under development) by SigTech, Snell, Audio Alchemy, B&W, and other companies.

These processors attempt to compensate for the specific reflections that your speakers produce in your room. A microphone is used to record the pattern of direct and reflected sounds arriving at your chair. Then a computer analyzes the signal and synthesizes a matching digital filter that equalizes the direct sound, the reflections, and the standing waves. The result is a quality of sound that makes even the best conventional equalization sound crude by comparison. The price is high (several thousand dollars for the first-generation DSP systems), but the benefit is equally remarkable. Highs are spacious and extended, bass is gutsy and detailed, midrange timbres are smooth and uncolored, and stereo images combine astonishing precision with impressive depth and detail. —P.W.M.

one-third-octave equalizer that has constant-Q filter circuits.

Automatic EQ. This involves convenience as well as performance. A microprocessor that scans rapidly through the bands of an octave or one-third-octave equalizer/analyzer can adjust them automatically to deliver flat response at the microphone. If you're lucky, its programming may also enable you to equalize for a better-sounding target response—for example, a curve that is slightly boosted in the bass and has a gentle downward slope above 1 kHz.

Parametric EQ. Perhaps the most flexible type of equalization, because the "parameters" (center frequency and bandwidth) of each filter band are adjustable rather than fixed. For example, if you have 60-Hz hum in a recording, you can tune one band of a parametric equalizer precisely to the offending frequency and adjust its bandwidth to be very narrow so that it notches out only the hum without weakening bass notes at other frequencies. If your room has a standing-wave peak at 80 Hz, you can tune the parametric EQ to that frequency and set its bandwidth to match that of the peak.

Since it can be tuned to cope with specific problems, a parametric equalizer with only two or three bands can solve some problems even more efficiently than a thirty-band one-third-octave equalizer. And when you need a broad-band adjustment for musical tone control, a parametric EQ can do that as well. On the other hand, the very flexibility that is the main advantage of a parametric equalizer can make it difficult for a novice to learn how to use it successfully. A one-third-octave real-time analyzer can simplify the process by showing you precisely what effect your EQ adjustments are having on the system's response.

The Bottom Line

Equalizers come in many flavors. For most people, a basic ten-band graphic equalizer or equalizer/analyzer probably strikes the best balance between flexibility and simplicity of operation. This is especially true if your main interest is in altering the tonal balances of recordings. For applications in which precision is important or for equalization aimed at ameliorating sonic problems caused by room acoustics, a one-third-octave or parametric equalizer may be a better choice if you have the patience to deal with the increased complexity. □



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Almost four years ago, early in 1990, Bruce Hornsby stopped to take a look at the way he'd been living his life. For the past decade, the Williamsburg, Virginia, native had based himself in Los Angeles. It was a great place to consort with musician friends and walk amid the artifice, feeling like a cameo in *The Player*. But it wasn't such a great place for a married man who wanted kids to think about putting down permanent roots.

So Hornsby, the pianist-singer-songwriter who launched a Grammy-winning career in 1986 with his first album, "The Way It Is," moved back to Williamsburg. His third album, "A Night on the Town," was released shortly afterward, and in the next few months he played more than 100 shows as guest keyboardist with the Grateful Dead, toured with his own band, the Range, produced an album, "Anything Can Happen," for Leon Russell (a disappointment, since Hornsby wanted to recapture Russell's gospel-rock fire, and Russell wanted a computer record), and contributed to more than forty albums by such pop luminaries as Bob Dylan, the Cowboy Junkies, Crosby, Stills & Nash, Bonnie Raitt, and Don Henley (with whom he co-wrote *The End of the Innocence*).

"I went, 'Wait a minute! It's time to get back to *me*,'" Hornsby, thirty-

BRUCE HORNBSBY BY ALANNA NASH

- HIT SONGWRITER
- PIANO WIZ
- SOUTHERN REGIONALIST
- NICE GUY
- ALL OF THE ABOVE

eight, recalled on the phone from the Williamsburg home that now doubles as his recording studio. "So [in mid-1992] I turned down all record requests, and stopped playing with the Dead."

What Hornsby had in mind was a record that would offer a stylistic variation from his "E Minor 9/11 trademark, with four notes played as a cluster," which was widely, though badly, copied in the late Eighties. "I just wanted to go to another place musically," he says, a place that drew on what he'd always really been—a jazzman. His piano work, with its breakaway rhythms and single-note

lines laid over a pop backdrop, has always owed more to jazz than rock, reflecting the influence of Bill Evans, Keith Jarrett, and McCoy Tyner rather than Fats Domino or Jerry Lee Lewis.

And so Hornsby, who has an industry reputation as a real player and not just a Top-40 thug, put together a jam-happy trio (John Molo from the Range on drums, Jimmy Haslip from the Yellowjackets on bass), and invited superstar pals Branford Marsalis, Pat Metheny, Jerry Garcia, Phil Collins, and Bonnie Raitt to sit in. (Actually, that's not exactly right: Phil Collins wrote Hornsby a letter and asked if he could sit in.)

The resulting album, "Harbor Lights," has been hailed as "musicianly" and "bursting with feeling." But Hornsby is well aware that the fans who came aboard for his early radio-friendly hits (*Mandolin Rain*, *The Valley Road*) may not get it. "I'm sure a lot of people who own 'The Way It Is' will go, 'Oh, my Lord! What has he done?'" he says.

Hornsby is also hip to the fact that while many critics see him as a class performer blissfully unconcerned with image and trends, others sized him up as little more than "an unclassifiable icon whose style is all signature and no context," as Scott Robinson of the Louisville *Courier-Journal* put it. And he knows "Harbor Lights" will encourage more put-downs like that, since "basically, on the piano, this record is me sounding like various different people," and since many of the songs wear their obvious instrumental influences on their sleeves. The title song, for instance, evokes Keith Jarrett in the intro, and McCoy Tyner toward the end, where the chords get chromatic. Chick Corea surfaces in the extended chords at the tag of *China Doll*, Bill Evans in the solo on *Pastures of Plenty*. And *Long Tall Cool One* and *Talk of the Town* summon up the swing ghost of Wynnton Kelly.

But making influences his own is what Hornsby has always done best. As an individual and as a songwriter, he is defined by his family, his heroes, and the South that spawned him—curiously, without an accent of any kind. In short, he's a regionalist.

Bruce Randall Hornsby, the middle-class son of a heating-oil manufacturer and his civic-minded wife, spent his early teens as a jock, memorizing sports statistics and playing basketball. (Six feet four, he still plays to

THE WAY IT WAS

**THE BEST OF
BRUCE HORNSBY**

**THE WAY IT IS
(RCA 55904)**
His 1986 debut hit, mating
New Age jazz pianistics to an
indictment of racism.

**THE END OF THE INNOCENCE
(Geffen 24217)**
It's a Don Henley album, but the title
song, which Hornsby plays on and co-
wrote, is what people remember.

**SCENES FROM THE SOUTHSIDE
(RCA 56686)**
Portrait of the Artist as hit
machine (*The Valley Road*) and Robert
Frost fan (*The Road Not Taken*).

keep in shape.) At seventeen, when he was strumming average guitar in pick-up rock bands, his life changed nearly overnight. His older brother, Bobby, brought home a copy of Elton John's "Tumbleweed Connection" and a bootleg tape of Joe Cocker's "Mad Dogs and Englishmen" tour, with Leon Russell on keyboards. "I was floored," he remembered. "I was lucky that we had a really nice piano in the house."

Somewhere around twenty, while getting into jazz studying music at the University of Miami, his reading material also shifted, from Stan Musial's RBI stats to Southern writers William Styron and William Faulkner, who impressed Hornsby with their "own little milieu, with a set of characters and situations."

When he began writing songs he wanted to do the same thing with his music, and so he populated his work with portraits of real people from Williamsburg or the Tidewater region, something he continues on "Harbor Lights." *Talk of the Town* is about an interracial romance at his high school, while *Rainbow's Cadillac* features a composite character loosely based on a classmate sports star. Sometimes Hornsby includes his own family. *The Tide Will Rise* is a paean to the dying breed of the watermen, which once counted his paternal grandfather

among them. Yet another relative was a different kind of inspiration. For the cover art, Hornsby chose the twentieth-century Expressionist painter Edward Hopper's 1951 study, *Rooms by the Sea*. Hopper, it turns out, was his maternal grandfather's first cousin.

Hornsby's early records reflected an almost Hopper-like melancholia, which seems in sharp contrast to the singer's upbeat personality and world's-nicest-guy nonchalance. Maybe that's because his younger brother, John, wrote the lyrics to *Mandolin Rain* and *On the Western Skyline*, although Hornsby wrote his most intensely lovesick song, *Every Little Kiss*, entirely on his own.

After the first album, he shunned love songs altogether, concentrating on narratives that placed him more in the Robbie Robertson school of observation and storytelling than in the Joni Mitchell league of confessional songwriting. While the listener learns little about Hornsby from his songs, he says he likes it that way. He finds it pretentious and uncomfortable to think that anyone would be interested in his private tales of travail.

Yet "Harbor Lights" does contain one love song, *Fields of Gray*, with its Sam Cooke-ish soul vocal, which Hornsby wrote for his twin sons, Keith Randall and Russell Ives, named (in part) to honor Keith Jarrett and Leon Russell. Since the twins' birth two years ago this January, Hornsby's taken red-eye flights to get home to them and his wife of eleven years, Kathy. The boys "make it harder to go on the road now," but Hornsby says he's gotten more focused about his work since their arrival, not more relaxed as fellow musicians predicted.

Huey Lewis once called Hornsby's style "rural Southern high-brow," which never completely covered it, and certainly doesn't today, with Hornsby's early jazz flirtations now a full-blown affair. And so the question is posed: What if the guy in the next seat on the red-eye asked Hornsby what it is that he does?

"I'd say, 'I write songs about people in my town, and there's a lot of piano on the songs, and it's sort of a cross between Keith Jarrett and Ralph Stanley.'" Hornsby lets out a big laugh. "I'd probably say that because then they'd know less than they did when they started." □

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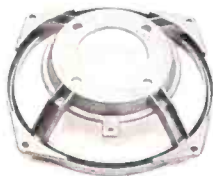
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It's hardly surprising, then, that a wide variety of techniques have evolved to meet the demands of different types of music and different artistic tastes. In the Sixties, for example, the rise of multichannel recording provided solutions to the creative

BY JOHN EARGLE

demands of overdubbing and the addition of tracks at later times and even other locations. Today we are accustomed to major pop and rock acts block-booking studios for weeks, not just to record an album, but to determine its ultimate form. In this context the recording studio has become a sort of laboratory in which many possible solutions can be evaluated, discarded, or eventually used.

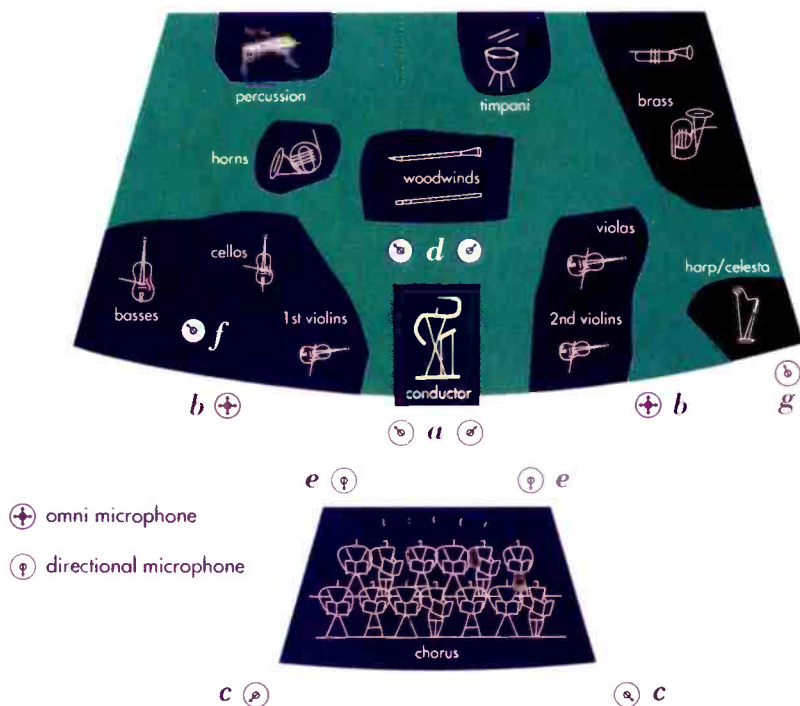
Most classical and jazz music does not require such elaborate technology, however. This music exists primarily in live performance and in many cases was conceived long before the invention of audio recording. Aside from large-scale operas and big bands, classical and traditional jazz music is normally amenable to straightforward direct-to-two-track stereo recording.

I spend about half my time doing this sort of recording, and to illustrate the nature of the task and what goes into it, I would like to describe three projects I've been involved in over the past three years. Although quite different from one another, they still have much in common in terms of planning and logistics. The first was a typical large-orchestra setup, the second a quartet of guitars, and the third a jazz group with a vocalist.

What a Recording Engineer Does

But before getting into the sessions themselves, I want to explain just what a recording engineer does. Stereo is an engineer's primary technique, and microphones are his tools. Stereo enables us to convey over two loudspeakers an impression of the complex sound field existing in the performance space. It takes no more than two microphones to do this, and most recording arrangements will have a central, or main, pair of directional microphones located close to each other and elevated to achieve good "sight lines" to the players. The microphones are splayed left and right so that sounds originating at the sides of the ensemble will be picked up predominantly by one microphone or the other and heard predominantly at the corresponding loudspeakers.

Sounds originating from the middle of the ensemble will be picked up by the microphones about equally and will be heard as so-called "phantom images" at positions between the speakers. Reflected sound in the performance venue will also enter the two microphones, usually in a fairly random



Orchestra and chorus. Main microphones (a) establish the basic stereo image. Mikes to the sides (b) and out in the house (c) add texture and ambience. The other microphones were used sparingly to add presence.

manner that will convey a sense of space or ambience behind the players.

The engineer also deals with musical balance. There are two aspects to this: the balance among the players themselves and their overall balance with the ambience of the recording venue. Balance among players is normally determined by seating arrangements and their fore-aft relationships to the microphone array. In complex works (an orchestra with chorus, for example), the main pickup may be supplemented by additional pairs of microphones. Individual accent microphones directed toward specific instruments or soloists may be needed for final balance adjustments, and their outputs will be "panned" to positions between the left and right loudspeakers as required. (Panning is a technique by which the signal from a single microphone is electrically split to create a phantom image at a position determined by the relative strength of the signal in the two stereo channels.)

Finally, the engineer often has to deal with the acoustical characteristics of the recording space itself. If the room is too reverberant, or "live," he will have to hang damping material in the form of large drapes. More likely,

the room will not be live enough, and the engineer will have to specify sound-reflecting materials to cover audience seats and openings into the room. These modifications usually take the form of large sections of plywood placed over the carpeting and sheets of plastic film pulled over the seating area. The engineer specifically looks for prominent early reflections from the sides of the hall and tries to incorporate them into the recording. Early lateral reflections are important in defining ambience, both in live performance and in recording.

Seattle Symphony Chorus and Orchestra

Delos International recorded Ravel's complete *Daphnis et Chloé* ballet with Gerard Schwarz and the Seattle Symphony Orchestra in their usual performance venue, the Seattle Opera House. A handy rule of thumb for orchestral recording is that for 2 hours of actual recording time you can net 30 to 35 minutes of finished product. A normal session comprises this amount of time, including breaks for the musicians, so we scheduled two sessions.

Advance planning for the project

fell into three major categories: musical considerations, physical factors in the hall, and technical considerations for recording. The conductor, producer, and engineer, if they have worked together for any length of time, normally come to a quick agreement on the basic stereo soundstage that will best serve a given musical work. In the case of *Daphnis*, we all agreed that a fine balance of "detail and distance" was called for. That translated into fairly close placement of microphones within the orchestra, along with generous use of microphones well out into the house to increase ambience.

The conductor and producer then blocked out the score to determine which sections should be recorded at what times. *Daphnis* calls for a large "wordless" chorus, and all choral sections had to be scheduled for an evening session because many of the singers have day jobs.

I had earlier determined a number of temporary physical changes in the opera house to make it more suitable for recording. Among them were:

Reconfiguration of the orchestra shell. We made it shallower and raised the overhead canopy to provide better coupling of the stage volume with that of the house itself, enabling both the front and the back of the orchestra to radiate directly into the same acoustical environment.

Livening the house. To increase the reverberation time, we removed upholstered seating from the loge and placed large quarter-inch sections of Plexiglas over all the velour-covered openings into the house.

Placement of the chorus *behind* the conductor. Reconfiguration of the orchestra shell left no room for the large chorus on stage. Moving the chorus to between Rows 4 and 11 enabled it to couple directly into the house with considerable acoustical envelopment by the reverberant field.

Stereophonic considerations call for slight reseating of the orchestra. Usually we spread the players out somewhat to get a wider and deeper soundstage. The French horns moved from their normal position behind the woodwinds to stereo half-left, the aim being to provide more stereo dialogue between the horns and the heavy brass instruments on the right. Timpani moved to stereo half-right to make room at the back of the orchestra for wider deployment of the percussion section. Again, the aim was to provide more lateral differentiation in the stereo image. Meanwhile, we set up the

Merrill Room, some 200 feet away, as a control room and production center.

The microphone complement for the recording was:

A main ORTF (Office Radiodiffusion-Télévision Française) pair behind and above the conductor—a pair of directional microphones spaced about 8 inches apart and splayed at about 110 degrees. Their primary function was to give unambiguous lateral and depth localization on the soundstage. The specific technique was first documented by the French Broadcast group about twenty years ago. (This is pair *a* in the orchestra and chorus diagram.)

A secondary flanking omnidirectional pair at the same height and distance from the orchestra as the main pair, each about 12 feet away. We introduced them into the mix at a lower level to broaden the string texture and provide added lateral reflected sound. (These microphones are labeled *b* in the diagram.)

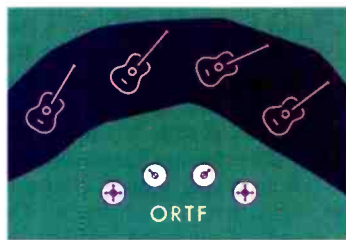
A "house pair" of widely spaced directional microphones placed well out in the house to adjust relationships of direct to reverberant sound in the recording (*c* in the diagram).

An ORTF pair on the woodwinds, used not so much for added level as for added presence (*d* in the diagram).

Chorus microphones. As with the woodwind microphones, this spaced pair of directional microphones was used for added presence, not level (*e* in the diagram).

Two microphones, used very sparingly, one on the first stand of basses and one for harps and celesta (*f* and *g* in the diagram).

Once levels were adjusted, the pacing of the sessions was in the hands of producer Adam Stern, whose major responsibility at this point was to insure that all parts of the score were covered with proper continuity so that



Chamber quartet. A simple setup with simple miking: a main ORTF stereo pair flanked by a pair of omnidirectional microphones mixed in just enough to yield a good "blend" across the stereo stage.

the work could be edited in the seamless fashion routinely expected from major record companies today. As the sessions got under way, the music was recorded in large sections, consistent with the basic production plan. We then did brief "insert takes" to fix isolated musical problems of balance, attack, intonation, and so forth.

Is twelve too many microphones for orchestral recording? Certainly not by today's standards—and certainly not when you consider that the bulk of the pickup is by way of the four across the front and the house pair.

The Los Angeles Guitar Quartet

The Los Angeles Guitar Quartet was recorded by Delos International and co-produced by Carol Rosenberger and Stephen Basili. The group provided its own set of recording challenges. Basically, the players are equals, and each should be heard with the same uniformity of timbre and precision of stereophonic placement. The venue for this recording was the chapel of the First Congregational Church in Los Angeles, a musician-friendly room noted for its acoustic warmth. Our intention in choosing this room was to preserve intimacy and, in a sense, to bring the players into the living room rather than to convey the listener into the recording space.

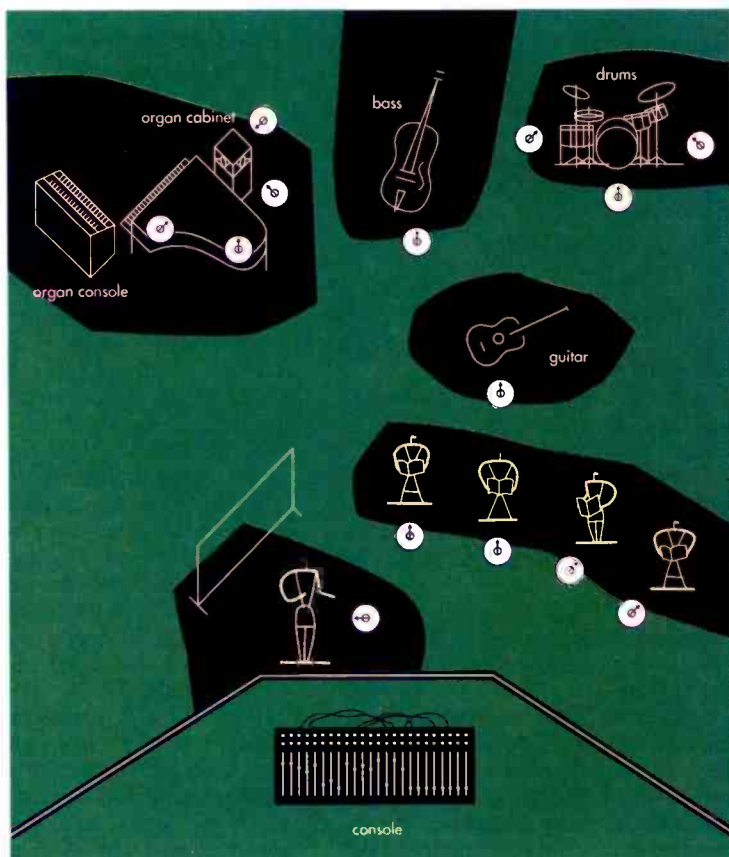
The players were arrayed from left to right, with those at the outside heard virtually at the left and right loudspeakers and the two inner players panned to intermediate positions slightly left and right of center. One of the peculiarities of stereo is that panned images do not sound quite the same as those assigned directly to a given loudspeaker. The reason for that is rather complicated, but basically it has to do with the manner in which the ears localize a *single* source as opposed to a *phantom* source produced by two loudspeakers. Our solution was to employ flanking omnidirectional microphones, this time at a distance of about 20 inches from the main ORTF pair. We introduced the omni pair into the stereo mix just enough to *decorrelate*, or randomize, the overall stereo signal, but not enough to spoil the precise imaging.

As a check on all of this, we recorded each member of the group playing a G Major scale at a normal level. The quartet came back for a listen, and final fore-aft seating adjustments were made. After this adjustment there were

no further gain changes. Unlike the orchestral sessions described above, these proceeded without clock-watching and extended well into the evening. There were frequent breaks, many playbacks, lots of snacking, and a general air of ease and informality essential to making good chamber music.

Ruth Brown

Ruth Brown's album "Blues on Broadway" was recorded in June 1989 at BMG Studios in New York with producer Ralph Jungheim for Fantasy



Blues session. A pure multimike production with the outputs of directional microphones panned at the console to place instruments and singers as desired on the stereo stage.

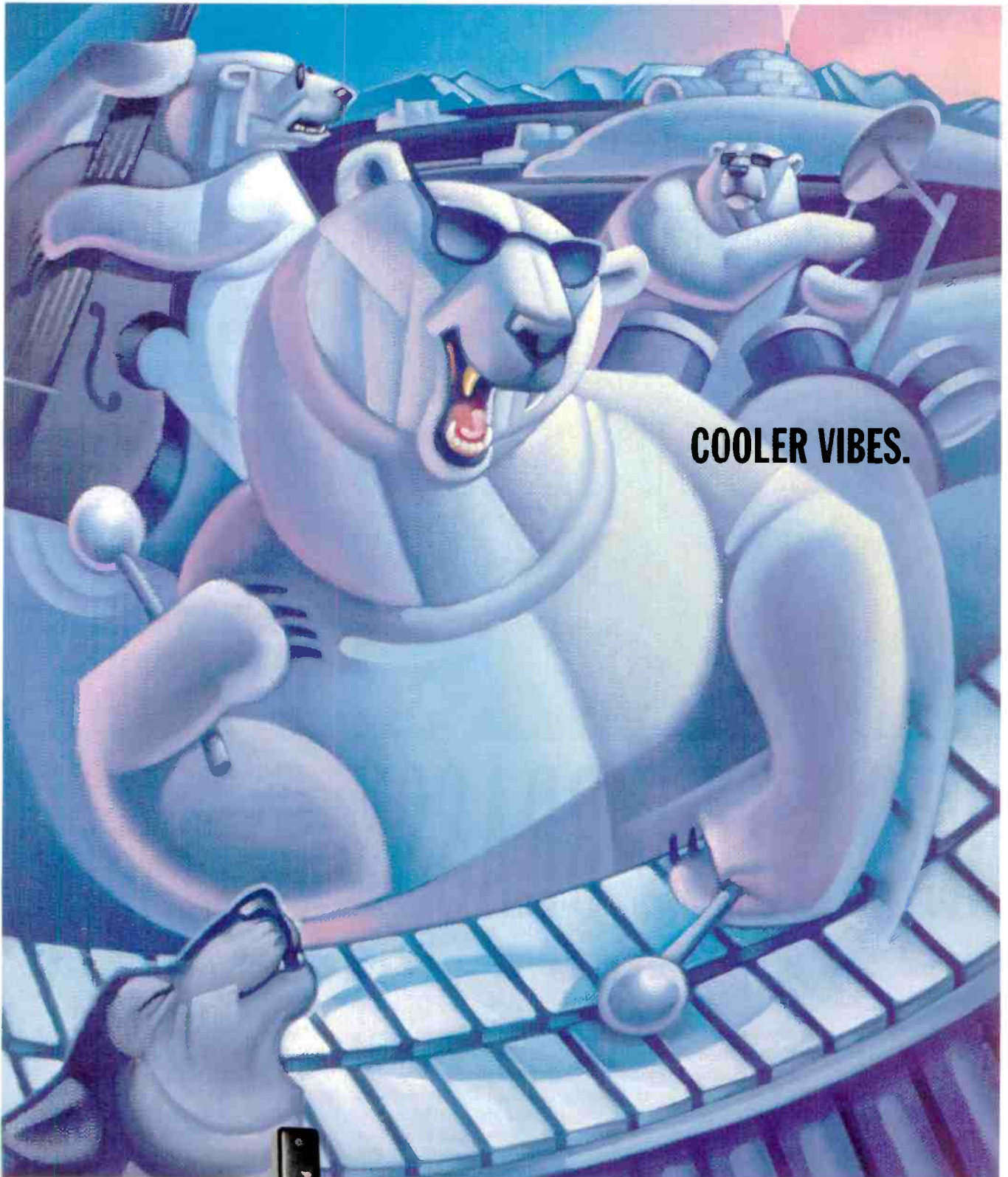
Records. Ralph and I had discussed the project and come up with a basic plan for the stereo soundstage: Ruth was to be front and center, with trombone, trumpet, and alto and tenor saxophones arrayed from left to right behind her. The rhythm foundation was, from left to right, piano, Hammond organ, bass, guitar, and drums. Only the piano, Hammond organ, and drums were miked in stereo; all other performers were picked up with single microphones and panned to the appropriate positions on the soundstage. We used stereo digital reverberation on all soloists, fed back into the console via two extra inputs. This recording is a

clear example of a stereo image conjured up strictly for presentation over loudspeakers—a pure product of the control room, as are most pop and jazz recordings.

As you can see from the blues session diagram, the studio setup was identical to the stereo soundstage as heard from left to right. Furthermore, the allocation of positions on the recording console follows the same left-to-right orientation. This matching of visual, tactile, and sonic cues is important to providing a comfortable environment for both producer and engineer working directly to two-track. The improvisatory nature of jazz is such that you are never sure what might happen at the end of a chorus. You have to watch all players at all times and be prepared to adjust the fader for whoever might have the next solo, following only visual cues. The producer will not have charts to help you in this task, but two pairs of eyes are certainly better than one.

The intrinsic nature of the blues is that the first performance pretty much says it all; a retake to correct a recording error will often not measure up to the first take, with or without its flaws. But despite all our planning, the first session got off to a bad start. The cartage company had not delivered the drum set by starting time, and we had to improvise something without drums to meet Jungheim's schedule. The soulful *Come Sunday* was the result of this mishap, and it is an unexpected dividend in the album. When the drum set finally arrived, the session got under way in the normal manner, and we began to rack up a set of what I think are masterpieces.

What really makes direct-to-stereo recording feasible in this particular musical environment is that it is fundamentally an "acoustical" event; there is never any thought of overdubbing anything. And before the first take of any song there is normally a bit of rehearsing, just to make sure that the musicians are all aware of their entrances and the order of things. This is also a time for the engineer to make initial balances, so that when Take 1 actually begins, there is a good chance things will be correct at the outset. From that point on, it is basically a matter of keeping track of the slow, twelve-bar structure of the blues and keeping a good eye on the studio so that by Bar 12½ you have a good idea of what will happen in Bar 13! It was a happy day for all of us when the album won a 1989 Grammy in the category of Best Female Jazz Vocal. □



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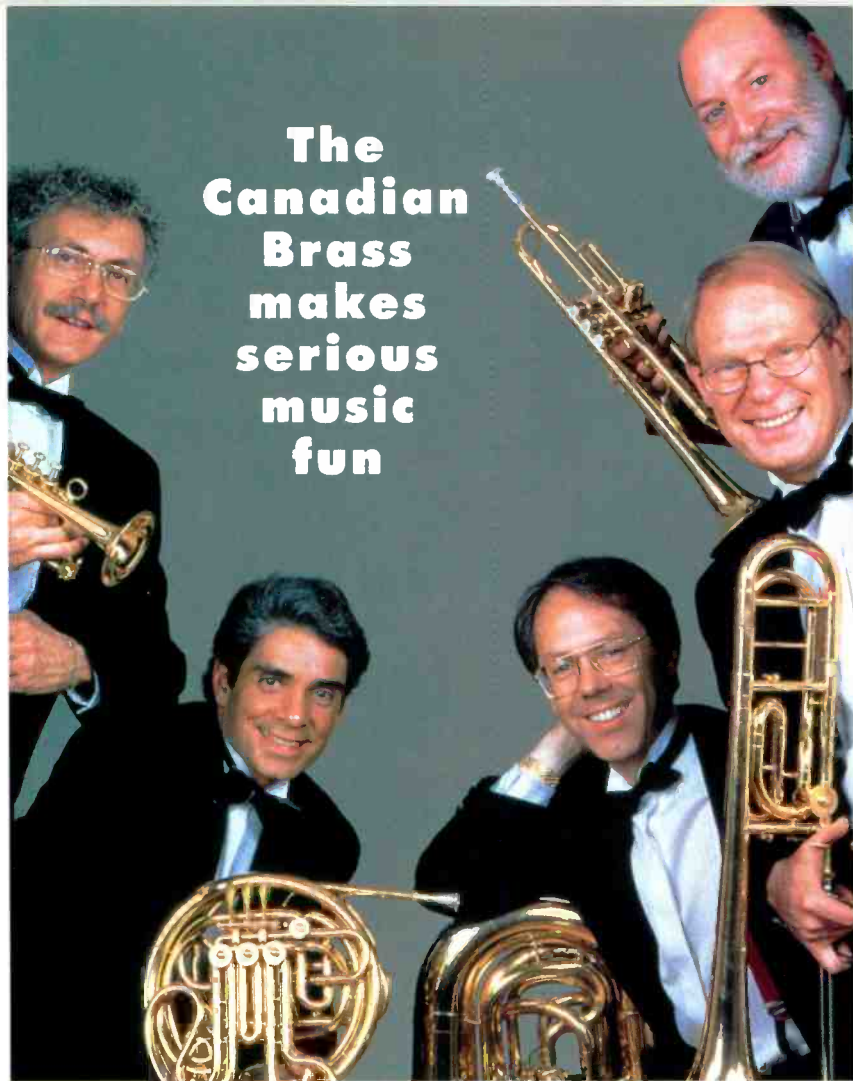
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Only one of the quintet's members actually *is* Canadian: trumpeter Fred Mills (from Guelph, Ontario). And, ironically, he wasn't one of the original members (he was *asked* to be, but other commitments delayed his joining). The founding father of the ensemble is a Missourian, trombonist

Eugene Watts, for several seasons a member of the Toronto Symphony under Seiji Ozawa. He and tuba player Charles (Chuck) Daellenbach, a Wisconsinite, are the sparkplugs of the group, which also includes trumpeter Ronald Romm, a native of Los Angeles, and French hornist David Ohanian, who's from Connecticut.

Watts and Daellenbach do most of the informal and often very funny commentary that introduces pieces during concerts, and they have become the group's spokesmen, as in the interview I did with them earlier this year in New York City.

"What we try to do," said Daellenbach, "is to bring fun to a concert or a recording but still keep the music very serious."

They have undoubtedly succeeded. Each member is individually recognized for his exceptional technical skills, while the quintet is known for showing that they *enjoy* performing. Their concert programs throughout the U.S., Europe, and Asia are invariably sold out. And most of their nearly thirty albums have been best-sellers, whether the music is by Bach or Vivaldi, John Philip Sousa or Jelly Roll Morton.

"You certainly can say we're eclectic," Watts admitted unashamedly. "Fortunately, the brass repertoire is still developing. We don't have the Beethoven string quartets, for example, for which you always have to be in a very serious mood."

"There was a period," noted Daellenbach, "when American musicians needed to establish that we really had the wherewithal to perform at a very high, serious level for concerts or recitals. But the demands on performers today are such that we're competing with television specials or Monday Night Football or whatever. So, while maintaining high performing standards, we're trying to show that music is—and always was—an entertainment."

"There are pieces that we set out to have fun with," added Watts, "but we always take the *playing* seriously. If you look at our concert programs or recordings, you'll see they're very serious. We're not playing games with the music."

"What brought us to the fun part of our programs," continued Daellenbach, "was almost survival. When we started out in 1970, no one was waiting for the next brass quintet. There was no audience demanding that we play a certain repertoire. We needed to create a space for ourselves if we were to survive. We felt we had to build a bridge, some kind of connection between the music and the audience. A pianist or a string quartet has lots to choose from, but we spend much of our time just creating a repertoire."

Fred Mills does many of the arrangements. He was principal trumpet in the Houston Symphony under Leopold Stokowski, and he came away from playing Stokowski's famous arrangements of Bach and other composers with what Daellenbach

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Squeeze Finds "Some Fantastic Place"



PHOTO: ANDREW CATTIN/ARM RECORDS

Among the most tuneful and likable bands to come out of the British New Wave, Squeeze remains a group of card-carrying pop neo-classicists who, in an age of diminished expectations, are almost too bright for their own good. On their new album, "Some Fantastic Place," they redefine their pure-pop style, undaunted by the prevailing winds of faddishness.

Paul Carrack, replacing founding keyboardist Jools Holland for the second time, is on board here; it was he who brought Squeeze their closest brush with

broad success as the main voice on their 1981 Top-40 hit *Tempted*. But where "Some Fantastic Place" really shines is in its moments of quintessential popcraft, with Glen Tilbrook's still boyish tenor leading the charge as the group negotiates the fleet twists and turns of their unfailingly melodic yet always unpredictable tunes.

Squeeze has packed most of their firepower up front on the album. The opening cut, *Everything in the World*, leaps out of the speakers with barnstorming vigor as Carrack's Booker T.-style key-

boards swim smilingly around a chunky rhythm guitar. From there they launch into the title song, a sweetly sentimental reminiscence about a departed loved one (someone's mother, by my reading of the lyrics) that's aswirl in a vocale chorale recalling the Beach Boys and 10CC. Other delights include *Third Rail*, in which countryish guitar licks bounce and twang around Tilbrook's and Chris Difford's vocals; *Loving You Tonight*, an effective Al Green homage; and *It's Over*, which tangibly evokes a sense of a relationship's finality in discordant musical metaphor.

The Difford and Tilbrook songwriting team is still razor-sharp here, with Difford matching wry, closely observed lyrics ("Cold shoulder, like a slaughtered cow in a butcher's fridge") to Tilbrook's colorful and almost defiantly melodic musical settings. Admittedly, "Some Fantastic Place" loses some of its force as it wears on. But the album stands out from the current pack in its wit, sparkle, and literate reach. More power to them; may they Squeeze on indefinitely.

Parke Puterbaugh

SQUEEZE Some Fantastic Place

Everything in the World; Some Fantastic Place; Third Rail; Loving You Tonight; It's Over; Cold Shoulder; Talk to Him; Jolly Comes Home; Images; True Colors (The Storm); Pinochio
A&M 31454 (48 min)

A New Russian Piano Star

Boris Berezovsky, a member of the last generation of Russian pianists trained in his country when it was part of the Soviet Union, won the Tchaikovsky Competition in Moscow in 1990, toured our country the following year, and has made a few recordings. His initial impact on the consciousness of Western listeners may



DIRK FISCHER/TELDEC

Pianist Boris Berezovsky

not have been as dramatic as that of the teen-age Evgeny Kissin (who is now twenty-two), but his new Schumann recital on Teldec should be enough to propel him, at age twenty-four, not only to the center of attention but to the very top rung of today's pianists.

The three works Berezovsky plays are the *Davidsbündlertänze*, the Second Piano Sonata, and the Toccata in C Major. None of these has wanted for attention on CD, but what Berezovsky brings to this music is so altogether exceptional in respect to the style and character it demands that comparisons become meaningless. His response is nothing short of miraculous—not just in terms of technique, but in really getting to the core of the music without laying on even the thinnest veneer of the sort of “interpretation” that would set him up as a middleman between Schumann and the listener. Everything one hears in this remarkable succession of emotions and colors is too spontaneous-sounding—too instinctive, one might say—for that. And the toccata rounds out the program not as a pyrotechnical display, but as a summing-up of its poetic content.

It is all too facile to suggest this is “Schumann’s own voice,” but that’s the effect these performances have. Their persuasiveness is bolstered as much by Berezovsky’s reflectiveness and tenderness as by his enthusiasm and drive, by his tasteful avoidance of excess, by any

number of appealingly balanced qualities. What they add up to is an unchallengeable belief in and love for this music, a love that the listener is most happily compelled to share. It helps, too, that the recording itself is as honest and unobtrusive in its well-focused realism as Berezovsky’s approach to the music.

Richard Freed

SCHUMANN:
Davidsbündlertänze; Piano Sonata
No. 2; Toccata in C
 Berezovsky (piano)
 TELDEC 77476 (62 min)

The Great Lost Joe Ely Album

In 1980, Texas country-rocker Joe Ely joined up with the punk band the Clash for a tour of England. Ely, raised on equal parts Jerry Lee Lewis and wild Texas wind, was no stranger to over-amped raving, but that tour brought out some kind of energy that must have surprised even him. If in some ways it severed his country roots, it also resulted in “Live Shots,” a concert set

that remains the best record he’s ever made, and earned him a well-deserved cult following in Europe.

Unfortunately the U.S. release of “Live Shots” was delayed for a year or so. And when it was finally released here, it was in a limited-edition LP with an EP of four additional songs produced by Al Kooper; with little promotion or fanfare, the album sold sparingly, and all but disappeared. Through the years, though, it took on a mystique of its own.

Now available for the first time on CD—and including the four bonus tracks—“Live Shots” is a powerhouse performance that more than lives up to its myth. From start to finish, Ely and his band are at the top of their form, crackling like an overloaded circuit and threatening to burn down the house (in this case, a now-defunct club a teacup’s throw from Buckingham Palace). Ely matches his personal exhilaration with a first-rate program, including a manic version of his crowd-pleasing *Fingernails* and eerily atmospheric renditions of Butch Hancock’s haunting songs of romantic craving and loss (*Boxcars*, *Fools Fall in Love*, and *She Never Spoke Spanish to Me*). Throughout, the band concocts a brilliant interplay of country, rock, and blues, the kind of cultural exchange that was still somewhat revolutionary at the time. But the real juice comes from Ely, who sings in a quavery,



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BEST OF THE MONTH REVIEWS

elastic voice that suggests a man possessed—on the edge, pent up, misunderstood, dangerous, like someone who's just broken out of the loony bin and knows that he's got only one hour of freedom.

In short, there's not a dull moment here. And even if you own the rare LP, you'll want it on CD, too, particularly if you've misplaced the four bonus tracks—Jimmie Dale Gilmore's transcendent *Treat Me Like a Saturday Night*, Hancock's *Wishin' for You*, a hop-headed *Not Fade Away*, and Ely's own *Crazy Lemon*, a tale of small-time thievery and lunacy worthy of Gus Van Sant. If you've heard Ely's previous records and never quite understood all the fuss, then "Live Shots" should set you straight. It's what the best melding of Texas country and roots rock is all about. *Alanna Nash*

JOE ELY Live Shots

Fingernails; Midnight Shift; Honky Tonk Masquerade; Honky Tonkin'; Long Snake Moan; I Had My Hopes Up High; She Never Spoke Spanish to Me; Johnny's Blues; Fools Fall in Love; Boxcars; Crazy Lemon; Not Fade Away; Treat Me Like a Saturday Night; Wishin' for You MCA/SOUTHCOAST 10816 (55 min)

Anne Sofie von Otter Sings Grieg

This year, which marks the 150th anniversary of the birth of the Norwegian master Edvard Grieg, has brought with it a freshet of new recordings, both of the old favorites and of significant works not often heard outside Scandinavia. Deutsche Grammophon has released a CD on which the Swedish mezzo-soprano Anne Sophie von Otter and pianist Bengt Forsberg provide superlative realizations of 25 of the finest of Grieg's more than 140 songs.

The collection ranges from two of Grieg's early settings of Danish poems by Hans Christian Anderson, including the ever-popular *I Love Thee*, through settings of works by such Norwegian literary masters as Ibsen and Björnson. Kirsten Flagstad's classic performances of many of these songs have set the stan-



Mezzo-soprano Anne Sofie von Otter

dard for decades, but Von Otter matches the legendary Norwegian soprano at every turn. And Forsberg's musicianship and pianism are on the same high level of poetic intensity and eloquence.

Unexpectedly, some of the finest singing here, as well as the finest music, is to be heard in the settings of German poems by Heine, Goethe, and others. The most striking of these is *One Day, My Thought*, which uses a text by Emanuel Geibel that is better known in a setting by Hugo Wolf. Grieg's handling of harmonic coloration is haunting.

Because the major international literary languages have dominated the world of the art song, performances of Scandinavian songs in the original tongues have been largely confined to Scandinavia. Recordings have brought and will continue to bring this music to a wider audience. And as a representation of Grieg's art songs, this superbly produced CD belongs at the very summit. *David Hall*

GRIEG: Songs

Von Otter; Forsberg
DEUTSCHE GRAMMOPHON 437 521
(68 min)

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• **WILLIE DIXON: I Am the Blues.** COLUMBIA/LEGACY 53627. The 1970 solo album by the Chicago blues songwriter and producer featuring his own versions of his standards, among them *Spoonful*, *Seventh Son*, and *Little Red Rooster*.

• **SWING THAT MUSIC!** SONY MUSIC SPECIAL PRODUCTS 11020 (four CD's). A boxed set, from the Smithsonian Collection of Recordings, featuring ninety-four Swing Era performances by Jack Teagarden, Jimmie Lunceford, Bing Crosby, Earl Hines, Charles Mingus, Stan Getz, Duke Ellington, and many others.

• **IAN HUNTER: You're Never Alone with a Schizophrenic.** RAZOR & TIE 2011. The 1979 solo album by Mott the Hoople's frontman, featuring the anthemic *Cleveland Rocks*.

CLASSICAL

• **MARIAN ANDERSON: Sings Handel, Bach, Schubert, Brahms, and Spirituals.** EKLIPSE CD26 (two CD's). Transferred from 78-rpm recordings, this set spans twenty years of the legendary contralto's career, from the late 1920's to the late 1940's.

• **BOCCHERINI: Cello Concertos.** Bylisma; Schröder. TELDEC 77624. Four of the eighteenth-century Italian composer's works recorded in the 1960's by the Dutch cellist Anner Bylisma with the Concerto Amsterdam led by Jaap Schröder.

• **BRAHMS: Paganini Variations; Four Ballades. LISZT: Paganini Etude No. 2.** Earl Wild. VANGUARD 4034. The virtuoso American pianist in a program originally released in 1967.

• **ARTUR RUBENSTEIN: Carnegie Hall Highlights.** RCA VICTOR 61445. Works for solo piano by Debussy, Szymanowski, Prokofiev, Villa-Lobos, Schumann, and Albéniz from three 1961 recitals.

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POPULAR MUSIC REVIEWS

NEW RECORDINGS REVIEWED
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FRANCIS DAVIS, PHYL GARLAND,
RON GIVENS, ROY HEMMING,
ALANNA NASH,
PARKE PUTERBAUGH, AND
STEVE SIMELS

GARTH BROOKS

In Pieces

LIBERTY 80857 (38 min)

Performance: **Drama junkie**

Recording: **Very good**

Mega-seller Garth Brooks says he called his new album "In Pieces" because that's the way the program came together. Well, it sounds like it, too. Brooks rounded up his reliable writers (Stephanie Davis, Tony Arata, and Pat Alger), so we know what to expect—well-written but predictably unpredictable songs about edgy, fringe subjects like wondering what your uncle did to get strung up (*Kickin' and Screamin'*) or eavesdropping on an adulterous couple who witness a murder (*The Night Will Only Know*).

But most of this—including *American Honky-Tonk Bar Association*, better suited to the mindless Brooks & Dunn, and *Ain't Going Down (Til the Sun Comes Up)*, a sex-and-mayhem ditty that cribs from both Bob Dylan and Eddie Rabbitt—is simply all too pat and familiar. It's the Garth Brooks patchwork-quilt approach, designed to dazzle and blanket at the same time. And it works, as long as you don't get too close.

The best work here is the music that leaves Brooks's "let's get 'em by the throat" sense of drama on the shelf. *One Night a Day*, a jazzy ballad Brooks sings with a straight-ahead sweetness far removed from his put-on cowboy persona, is a terrific little song that does its job nicely. And so does Dennis Linde's cajun-tinged *Callin' Baton Rouge*, where Brooks reunites New Grass Revival, who first recorded the song, to back him. But the album's real gem is its closer, *The Cowboy Song*. Brooks wisely and skillfully undersings it, one of the few times in his career he lets art win out over hamminess.

Brooks may have broken every chart and concert-attendance record on earth. But he needs to get back to the music before he starts looking like little more than a drama major who grabbed a guitar and got lucky. **A.N.**

BELINDA CARLISLE

Real

VIRGIN 39102 (47 min)

Performance: **Real bad**

Recording: **Antiseptic**

Devoid of personality and purpose, Belinda Carlisle's "Real" is a bloated mirage of counterfeit emotions and synthetic music. Carlisle's voice has seemingly lost its range, reduced to a joyless rasp not unlike Stevie Nicks's in her decline or a post-New Wave Marlene Dietrich's. And her programmed, polyester rock tunes linger too long over the mundane, arduous details of love's labors lost, arriving at such pearls of wisdom as "love is a big scary animal." Attempts to inject musical

exotica—African rhythms, Middle Eastern modalities—seem gratuitous and designed to deflect attention from the album's lack of substance. Listening to "Real" is like watching a career sink into the La Brea tar pits. Carlisle's lost the beat. **P.P.**

ROBERT CRAY

Shame + a Sin

MERCURY 314 518 237 (48 min)

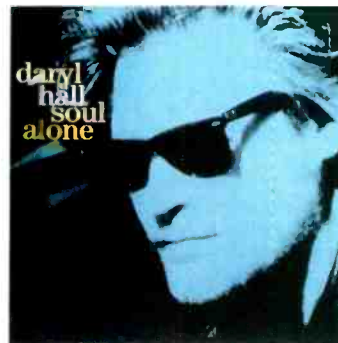
Performance: **Defines the genre**

Recording: **Mixed**

On "Shame + a Sin," blues guitarist-singer Robert Cray proves again why he's the artistic successor to B.B. King and Bobby "Blue" Bland. His guitar playing, while never showy, carries a terse authority that speaks not only for the tradition, but for the singer himself—it walks its talk like King's beloved Lucille. As a singer, Cray takes a populist view (the everyman complaint, *1040 Blues*, about paying taxes, and the everyman fantasy—winning the lottery—I'm Just Lucky that Way). He also deals with neo-traditional blues themes like domestic distress—how he's been cuckolded (*Some Pain, Some Shame*), how he's confused about his own affair (*Stay Go*), how he brags about his newfound freedom (*You're Gonna Need Me*), how he suffers when she's gone (*I Shiver*).

At times, as on *Don't Break This Ring*, Cray finds a high, tortured vocal groove and rides it like the great R&B kings of the Sixties. If he sometimes goes on too long, if emotionally he

could bleed a little heavier now and then, and if the mix here is often skewed (drums mixed as high as the guitar), Cray makes up for it with a no-nonsense approach to an honest blues lament. **A.N.**



DARYL HALL

Soul Alone

EPIC 53937 (56 min)

Performance: **What soul?**

Recording: **Good**

How's this for a bad idea: send Daryl Hall to England to make an album that mates hip-hop with Philly soul. Give the guy his due for trying to stay up to date and putting a new spin on old formulas. But "Soul Alone" falters in the execution, its songs a series of stiff, programmed rhythm tracks over which squiggly nothings have been scribbled on the syn-

LAWYERS, GUNS, AND MONEY



Did you know that we live in the Golden Age of movie soundtrack albums? An era when the score to just about any film—yes, even *Critters 2: The Main Course*—is available on CD? To help you through the glut, here's a comparison of three recent soundtrack CDs you may have missed.

	THE FIRM (MCA/GRP)	IN THE LINE OF FIRE (Epic Soundtrax)	RISEING SUN (Fox)
Music by	Dave Grusin	Ennio Morricone	Toru Takemitsu
Musical Style	Jazz/blues	Post-spaghetti western	Alban Berg meets Tomita
Pop Acts Shoehorned In by Greedy Execs	Lyle Lovett, Jimmy Buffett, Nancy Griffith	None (studio had attack of integrity?)	None (all important pop stars work for Japanese-owned corporations?)
Shameless Bid for Radio Play/ Best Song Oscar	How Could You Lose Me? (Grusin piano solo)	None (see above)	None (koto not considered viable commercial instrument)

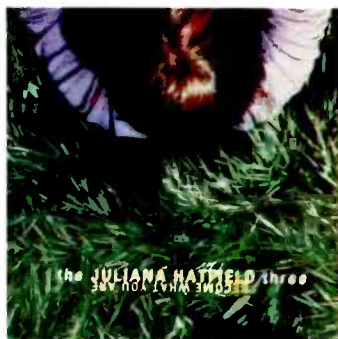
thesizer. Hall's brow-furrowing vocal efforts to coax fire from smoldering twigs prove fruitless, compounding the album's sense of exertion. In such a desiccated context, the title's evocation of "soul" is a misnomer. Hall would have been better off revisiting his roots rather than making this calculated effort at currency. Especially now, when the current scene is a corruption of everything soul stands for. *PP*

EMMYLOU HARRIS

Cowgirl's Prayer
ELEKTRA 61541 (41 min)

Performance: Mixed
Recording: Good

There are the makings of a really fine, original album in a handful of tracks on "Cowgirl's Prayer," but the song selection is so inconsistent and the programming so muddled that the artist's intentions get buried and a golden opportunity is lost. Emmylou Harris could have built an entire album around four numbers—*A Ways to Go*, *The Light*, *Prayer in Open D*, and *I Hear a Call*—on the theme of finding and embracing "the light," a metaphorical embodiment of anything from which inner peace can be divined. She sings these songs to the crisp accompaniment of an intimate acoustic ensemble in a smaller-than-usual voice that is prayerful, supplicating, and emboldened by conviction. Unfortunately, the more transcendent material on the album is surrounded by inappropriate and substandard tunes such as *High-Powered Love* (a lame Wynonna Judd pastiche) and *Lovin' You Again* (a tearjerker in which a wretch the singer can never say no to comes over drunk—again). Then there's the weird recitation of *Jerusalem Tomorrow* (no Grammy for Best Rap Song will be forthcoming), and the cliché-riddled ode to New Orleans, *Crescent City*. "Cowgirl's Prayer" is half of a great album obscured by half of a mediocre one. *PP*

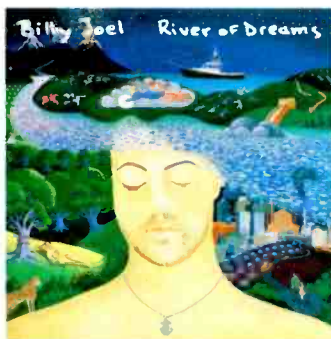
**THE JULIANA HATFIELD THREE**

Become What You Are
ATLANTIC/MAMMOTH 92278 (41 min)

Performance: Fresh
Recording: Garagey

Juliana Hatfield, formerly of the Blake Babies and currently alternative rock's premier pinup girl, gets right to the point on *Supermodel*, the opening cut from "Become What You Are": "The highest-paid piece of ass / You know it's not going to last / Those magazines end up in the trash." That kind of frankness, delivered with coquettish matter-of-factness by guitarist/singer Hatfield, is refreshing. Listening to her lead her trio through its paces—calling out "bridge" midway

through *This Is the Sound*, then assembling a strange little snippet of guitar architecture that has more to do with Sonny Sharrock than your garden-variety rocker—is a pure delight. It's that seeming gulf between Hatfield's sassy, little-girl-lost vocals and her surehanded, sophisticated musical command that piques a listener's interest. And her songs are wonderful, especially *My Sister*, an offhand gem about sibling rivalry set to music that passes from fanciful pop to grinding guitar screed in the time it takes to say "mood swing." Keep an ear open for this intriguing ingenue. *PP*

**BILLY JOEL**

River of Dreams
COLUMBIA 53003 (49 min)

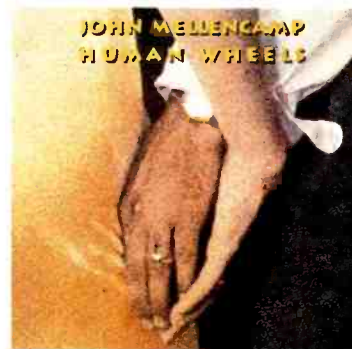
Performance: Lively
Recording: Sharp

You can tell that Billy Joel used to be a boxer from the punches he throws on "River of Dreams"—at his former manager, at the music biz, at a world ruled by greed, at the blues that at times overtake even him. "River of Dreams" is a feisty rebuttal to all that's gotten under his skin lately, balanced with a fair number of unironic blows struck for decency and family values. There are songs of adoration to his wife (*Blonde Over Blue*, a clever allusion to the mood-lifting power of his marital mate Christie Brinkley) and child (*Lullabye* [*Goodnight, My Angel!*]), plus an ambitious attempt to encapsulate two millennia in a handful of overly larded verses (*Two Thousand Years*).

There is no question this record was dictated by emotion. *A Minor Variation* is among the most convincing arguments ever made that fame and fortune cannot keep the blues away. Joel sings with an unbridled passion that bares the feeling behind plain-spoken lines like "Some days I have to give right in to the blues." The playing and arranging throughout are as sharp as a saber's tip. Just listen to *Shades of Grey*, a Cream-derived rocker featuring a cameo by Mountain's Leslie West. Or catch the band driving home the hoary truths of *No Man's Land*—three guitars, a straight-ahead beat, and anger to burn. Then try the on-a-dime shift from crackling, bluesy verse to dreamy, orchestrated chorus in *The Great Wall of China* and the glowing chorus vocals of *All About Soul*.

The title track, with its chanted, call-and-response vocals and syncopated, percussive thrust, seems to nod in the direction of former labelmate Paul Simon. But it's Bruce Springsteen, with his first-person confessions of doubt and dislocation writ large across his music, to whom Joel seems most beholden as a

songwriter this time out. The decision to thematically build an album around Joel's unbending has opened up his music, giving it a potent immediacy and the liberating air of a personal catharsis. *PP*

**JOHN MELLENCAMP**

Human Wheels
MERCURY 518088 (45 min)

Performance: Familiar
Recording: Good

Two years ago, John Mellencamp turned all the amps up to eleven and cut loose with the most intense sonic blast of his career. "Whenever We Wanted" was fine on its own downbeat-but-rocked-out terms, but Mellencamp didn't sound like himself. On "Human

TRACK RECORDS**Billy Joel**

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Plano Man (1974)
COLUMBIA 32544
Major-label debut, image-defining title song.

Turnstiles (1976)
COLUMBIA 33848
Overlooked gem: *Say Goodbye to Hollywood*.

The Stranger (1977)
COLUMBIA 34987
Future standard: *Just the Way You Are*.

52nd Street (1978)
COLUMBIA 35609
Hit single: *My Life*.

Glass Houses (1980)
COLUMBIA 36384
"New Wave" record, humongous seller.

The Nylon Curtain (1982)
COLUMBIA 38200
Surprising protest song: *Allentown*.

An Innocent Man (1983)
COLUMBIA 38837
Brill Building, Sixties-pop tribute.

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Wheels," he's returned to strolling down Main Street, USA, squinting warily at life as most people live it.

The easy-moving combination of acoustic and electric guitars, elastic rhythm section, and folksy violin-accordion accents—perfected on "Scarecrow" and "The Lonesome Jubilee"—is back in full, understated force. And once again these arrangements provide an energizing contrast to Mellencamp's world-weary, sometimes fed-up vision. *Junior* is the latest in a series of vivid character sketches—"I sit here watchin' / The people down below / I try to imagine / The places that they go / I

don't know." And *Sweet Evening Breeze* is a wistful vignette about adolescent longing, a memory playlet heavy with what might have been.

If "Human Wheels" isn't as strong as Mellencamp's mid-Eighties efforts, it's because he flirts a little too much with lyrical significance. The title cut, for example, is overripe with turgid allusions ("While I, with human-hindered eyes / Unequal to the sweeping curve of life / Stand on this single print of time"). But these are only minor glitches in a splendid return to form. John Mellencamp is back home again. *R.G.*

PET SHOP BOYS

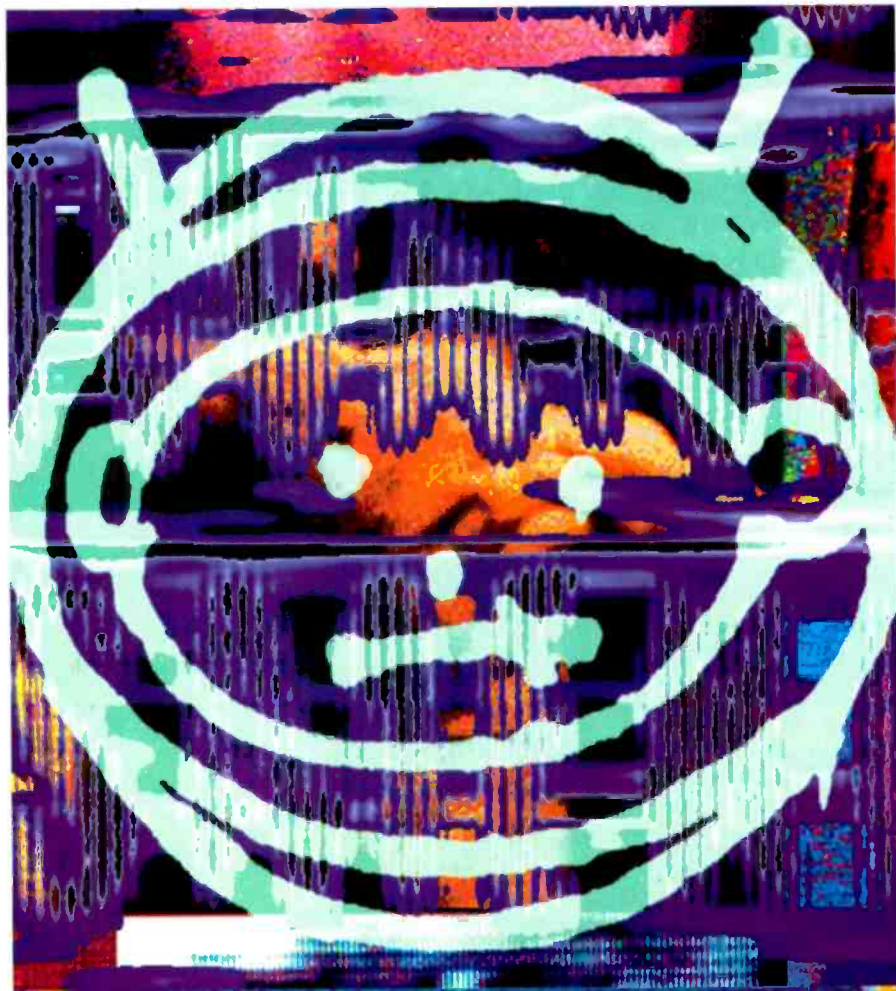
Very

ERG/EMI 89721 (53 min)

Performance: Symphonic pop

Recording: Very good

Because they're working in a genre that doesn't get taken seriously, Pet Shop Boys are generally shrugged off (at least in the U.S.) as mere purveyors of high-gloss dance music. Their tools are indeed the synthesizer and the drum machine, yet they've shown that songs of lasting substance can be created by knob twiddlers no less than string pickers—witness their moving and masterly "Behavior" album from 1990, an artful brood on mortality. Now they've returned with "Very," a lighthearted album about love and its emotional facets. Its dozen songs are given droll, deadpan readings by singer Neil Tennant. Occasional lines (such as the one in *Can You Forgive Her* about being made a laughingstock "'cause you dance to disco and you don't like rock") and entire songs (like *Dreaming of the Queen*, in which the singer kvetches with Lady Di) treat the slings and arrows with a dose of wit. Well-deployed synths mimic the sound of a pop orchestra from the era of Jimmy Webb and Phil Spector, achieving a heavenly liftoff on *I Wouldn't Normally Do This Kind of Thing*, a perfectly lovely, thrilling jewel of a tune. Not everything here cruises along with such streamlined authority, and some lapses in songwriting and judgment (covering the Village People's *Go West*) dull the sleek finish. Nevertheless, "Very" is another good piece of enriched popcraft from Pet Shop Boys. *P.P.*



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Smashing Pumpkins • Siamese Dream



SMASHING PUMPKINS

Siamese Dream

VIRGIN 88267 (62 min)

Performance: Riveting

Recording: Good

If nothing else, rock-and-roll teaches us the power of crossbreeding. From the first genetic manipulation of country, blues, and whatever that gave us early rock, to the almost constant mutating of pop DNA that has more recently given us such far-flung sub-genres as thrash metal and techno, musicians are always recreating something fresh in the lab. These days, the splicing of metal and alternative seems to be producing the most interesting offspring. And Smashing Pumpkins is the headiest of the heady.

Bombastic riffing—newly minted from the archives of Hendrix, Zeppelin, and others—gets reconfigured by this Chicago quartet into jagged shards and clumsy arpeggios. They've taken the beauty of heavy metal's obsessive hooking and messed with it. "Siamese Dream"

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doesn't go for the grunge, and yet it smells like new, improved teen spirit. (Not coincidentally, this album was, like Nirvana's "Nevermind," co-produced by the masterly Butch Vig.)

Like most alternative rockers, the Pumpkins' major songwriter, Billy Corgan, broods upon the conflicts of post-adolescence—the push-pull of becoming independent, the push-pull of romantic love, the push-pull of family. For Corgan, life is like Newton's third law of motion: For every emotion there is an equal and opposite emotion. In *Hummer*, he first talks about being reborn as his own happy self, but concludes that "Life's a bummer / When you're a hummer." *Cherub Rock*, which seems to be primarily about the conflict between art and commerce among alternative bands, is dense with allusions to stuff like religions. All of these thoughts are packed tight, but getting through them is half the fun. The other half is the way the music of "Siamese Dream" kicks you in the solar plexus and leaves you gasping for more. R.G.

Collection

BOB DYLAN: THE 30TH ANNIVERSARY CONCERT CELEBRATION

COLUMBIA 53230 (two CD's, 148 min)

Performance: All over the place
Recording: Good

The most engaging aspect of this tribute album is that its performances, like those of Dylan himself, are kind of ramshackle, letting the chips fall where they may. The most disappointing thing about it is that there are a lot of rote, journeyman readings that may elicit a smile or a nod but little more. Competence is the byword as a procession of veterans take their turns behind the mike, implicitly celebrating the act of survival but too creatively fatigued to make much out of the moment. There's little palpable onstage chemistry to support the claim that this was a defining (or redefining) moment in pop culture. It was,

BRIT INVASION REVISITED



Elvis Costello, circa 1978

In the more than fifteen(!) years since his debut album, Elvis Costello has established himself not only as the preeminent singer/songwriter of his generation but also as one of the most prolific. Now the folks at Rykodisc have acquired most of Costello's humongous catalog and, with input from E.C. himself, begun to reissue it in coherent "universal" editions, reconciling the disparities between the former American and UK versions. The first fruits of the collaboration: Costello's first three albums—"My Aim Is True," "This Year's Model," and "Armed Forces"—each newly remastered and fleshed out with seven to nine bonus tracks derived from demos, singles, B-sides, and EP's (Ryko is also issuing the albums as a boxed set with the previously bootlegged "Live at the El Mocambo" as a bonus). Essential stuff, and it all sounds significantly better than the old Columbia CD's. S.S.

rather, simply time for another temporal milestone in a major artist's career to be marked (and marketed).

Still, there are individual moments that stand out. Neil Young gives adrenaline-charged performances of *Just Like Tom Thumb's Blues* and *All Along the Watchtower*, and Lou Reed chomps into the verbose, elliptical *Foot of Pride* with relish. Eddie Vedder of Pearl Jam is the token new kid on the block, and his venomous reading of *Masters of War* clearly argues that those lyrics hold true for yet another generation. Eric Clapton's bluesy take on *Don't Think Twice, It's All Right* is a boldly ambitious rethink worthy of Dylan himself. And Tom Petty and the Heartbreakers, playing like heaven's very own house band, kick up a cloud of dust on *Rainy Day Women #12 & 35*. The round-robin singalong of *My Back Pages* by Dylan, Roger McGuinn, Petty, Young, Clapton, and George Harrison toward the end of the program qualifies as a bona fide Historic Moment but is offered with a Wilburys-style grace and casualness, ennobling in its understatement. All in all, Dylan's million-dollar bash was a nostalgic exercise streaked with gray, a good time with its share of ups and downs—nothing more (and nothing less). P.P.

JAZZ REVIEWS

EASTERN REBELLION

Simple Pleasure
MUSICMASTERS 65081 (56 min)

Performance: Choice
Recording: Good

Pianist Cedar Walton's quartet, Eastern Rebellion, has undergone some personnel changes since it first appeared on a 1975 Impulse album—only Walton and drummer Billy Higgins remain from the original group. Clifford Jordan was Eastern Rebellion's first saxophonist, followed by George Coleman and Bob Berg. After Berg left to work with Miles Davis, the group continued as a trio; three years ago, it was joined by Ralph Moore, who, along with bassist David Williams, completes the present quartet. It is a winning combination. "Simple Pleasure" is their second MusicMasters release and the best. Four of the nine selections are originals by Walton, who is as versatile a writer as he is a player. But he is no less creative when it comes to rendering standards. Here the group gives enticing face-lifts to three—*My Man's Gone Now*, *All the Things You Are*, and *My Ideal*—and the set ends with a lovely duet that has Walton and Moore redefining Fred Lacy's *Theme for Ernie*, which you might have heard John Coltrane play on an early Prestige album. C.A.

SHIRLEY HORN

Light Out of Darkness
VERVE 9703 (63 min)

Performance: Hopeless
Recording: Very good

The band is fine, altoist Gary Bartz has winning moments, and it's a well-recorded album. But I have heard Ray Charles, and Shirley Horn is no Ray Charles. Frankly, she was ill-advised to tackle the Ray Charles material that makes up "Light Out of Darkness." I



Smashing Pumpkins: Rockin' around the gene pool

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should confess that I don't consider Ms. Horn worthy of all the attention she is getting lately, but her labelmate, Betty Carter, has been getting away with much worse for years. Horn's interpretations of songs we love are not as grotesque as Carter's, but neither does she demonstrate any talent that might distinguish her from the run-of-the-mill wannabe at your local showcase club. Her voice is feeble, her breathing is atrocious, and her piano is just a touch above adequate. Skip this pale attempt and buy a real Ray Charles record. C.A.

J. J. JOHNSON

Let's Hang Out
VERVE 4454 (69 min)
Performance: Hip bone
Recording: Good

While the Swing Era embraced the gliding, sonorous sound of the trombone, Bebop seemed not to take to it. Thus there were fewer star trombonists in postwar modern jazz than at any time since Kid Ory became the instrument's first major exponent. Bop nevertheless boasted a handful of significant trombonists, and none more successful than J.J. Johnson. Today, trombone players are even more scarce, but Johnson is still playing, and doing so with a characteristic mix of vigor and elegance.

"Let's Hang Out" offers a prepossessing blend of quintet and sextet performances, and an unaccompanied reading of Victor Young's *Beautiful Love*. But Johnson is as interesting a

writer as he is a musician, and about half of the selections are his originals, including the four-movement *Friendship Suite*, played by the quintet: Johnson, Jimmy Heath (tenor sax), Renee Rosnes (piano), Rufus Reid (bass), and Lewis Nash (drums). The group plays with the precision of a working unit, which it isn't, and Johnson's arrangements give everybody a chance to be heard to advantage. Although the sometimes familiar-sounding suite is the quintet's most interesting contribution, two other tracks, *It Never Entered My Mind* and *I Got It Bad (and That Ain't Good)*, are not easily dismissed.

For the sextet performances, trumpeter Terence Blanchard is added, and Ralph Moore, Stanley Cowell, and Victor Lewis replace Heath, Rosnes, and Nash. While it is not quite as cohesive, this combination compensates with the often overlooked talent of pianist Cowell and the youthful spirit of Blanchard and Moore. There is no generation gap in evidence here—Johnson is clearly comfortable in both environments. C.A.

RANDY WESTON/MELBA LISTON

Volcano Blues
ANTILLES 92692 (54 min)
Performance: A Joy
Recording: Excellent

"Volcano Blues" is a blues-drenched safari to the very roots of jazz. Randy Weston's music has always reflected his deep respect for the jazz pioneers and the sounds and



rhythms—particularly African and Caribbean—that inspired them. It is a love that comes through as clearly when he speaks as it does when he plays, and you will find it in abundance on this release. Arranger Melba Liston has retired her trombone, but Benny Powell is on hand, and the ten-piece band also includes trumpeter Wallace Roney, saxophonists Teddy Edwards and Hamiet Bluiett, and a rhythm section graced by guitarist Ted Dunbar, bassist Jamil Nasser, and drummer Charlie Persip. Two selections are sung by Johnny Copeland, who perhaps should have left *Harvard Blues*—the 1941 Jimmy Rushing number—alone, but is excellent on *Blue Mood*, with acoustic-guitar accompaniment. The orchestral arrangements are just what Weston's compositions call for, and the overall feel of this album is just right. C.A.

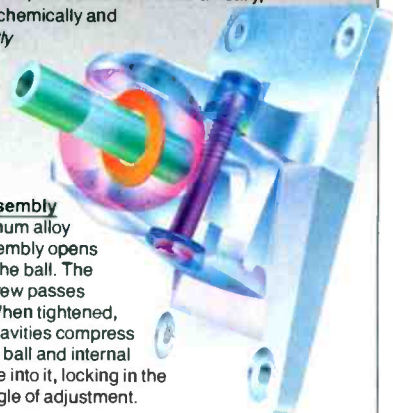
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DAVID FOSTER

The Christmas Album

INTERSCOPE 92295 (51 min)

The man who brought us Whitney Houston's *I Will Always Love You* strikes again, with a grotesquely overproduced holiday platter starring all the usual suspects (Michael Crawford, Vanessa Williams, Peabo Bryson). I'm glad I can enjoy the holidays knowing that I won't have to give this one another spin. *S.S.*

DJIVAN GASPARYAN

Moon Shines at Night

GYROSCOPE 6604 (49 min)

A virtuoso on the oboe-like duduk, Djivan Gasparyan plays as though inspired by benevolent forces from other worlds. Here his music sounds warm, sensuous, profound, exotic, meditative, and mellifluous. It's wonderful. *William Livingstone*

ROB LAUFER

Swimming Lesson

EYE 2201 (39 min)

Stunning, off-kilter-but-accessible neo-Six-

ties pop/rock, like Michael Penn but far more gorgeous. In fact, the opening *Summer Bloom* (oh, those tablas!) and *This Is Our Life* (chiming-guitar heaven) are so addictively melodic it was a week before I played the rest of the album. [\$11 postpaid from Eye Records, 8391 Beverly Blvd., #263, Los Angeles, CA 90048.] *S.S.*

PEGGY LEE

Love Held Lightly

ANGEL 54798 (48 min)

Passing years have taken a toll on Peggy Lee's vocal articulation, but not on her lightly swinging jauntiness. For this album celebrating songwriter Harold Arlen, the singer has uncovered eight previously unrecorded gems with lyrics by Johnny Mercer, Dorothy Fields, and Yip Harburg, among others. Cheers to Lee for resuscitating them so beautifully. *R.H.*

MOBY

Move

ELEKTRA 61568 (32 min)

I could be wrong, but this sure sounds like dance music to me. *S.S.*

MORPHINE

Cure for Pain

RYKODISC 10262 (37 min)

Morphine frontman Mark Sandman's old

band. Treat Her Right, played what was essentially minimalist blues, and his new combo—which dispenses heavy-metal riffs using sax, bass, and drums, but no electric guitar—pushes the concept even further. It sounds sort of like pared-down Gary Glitter, or maybe Led Zeppelin fronted by cool Fifties jazzbos. Atmospheric, different, and absolutely compelling. *S.S.*



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DAVID PATRICK STEARNS

BACH: Keyboard Partitas Nos. 1, 2, 3, and 5
 Claudio Arrau (piano)
 PHILIPS 434 904 (two CD's, 90 min)
Performance: Shaky but interesting
Recording: Excellent

BACH: Keyboard Partitas Nos. 1-6
 Maria Tipo (piano)
 EMI 54463 and 54464 (75 min each)
Performance: Bracing and alive
Recording: Superb

Although Bach figured little in Claudio Arrau's mature recording career, his all-Bach recitals in Berlin during the 1920's and 1930's are legendary. There are echoes of that era in these performances of four partitas, taped in Switzerland in 1991 when he was eighty-eight. At times the readings are Chopinesque, with elastic, seesawing rubato and the sort of rhetorical gravity that made even his Chopin seem weighty. At other moments the interpretive decisions seem dictated by his technical shortcomings—trills lose steam and tempos slow as more difficult passages approach. But an Arrau fan will reach the end of these ungenerously filled CD's wishing he'd lived to record the other two partitas.

Like Arrau, the Italian pianist Maria Tipo plays Bach in an unrepentantly pianistic style, never limiting her coloristic range to approximate the sound of the harpsichord. She takes full advantage of the music's lack of dynamic markings to mold a highly personal, overtly emotional interpretation. She has a spectacular technique and at every turn exhibits exquisite taste in using color, rubato, tension, and release, guided by an innate Italian sense of drama. Even the most functional fugue subjects take on vital, expressive roles. There's lots to quibble with in these performances (her ornaments don't sound quite right, for instance), but if you respond at all to this kind of approach to Bach's keyboard music, no one does it better than Tipo. *D.P.S.*

BRAMHS: Violin Concerto
BRUCH: Violin Concerto No. 1

Oleg: Royal Liverpool Philharmonic, Pesek
 DENON 79944 (65 min)
Performance: Fine solo work
Recording: Generally good

Paris-born Raphaël Oleg was the International Tchaikovsky Competition winner for 1986, and in standard concerto repertory he's among the best violinists around today. There is no superficial flash in his Brahms, where one senses an exceptional musical intelligence at work from beginning to end, together with impeccable intonation, unforced passagework, and a vibrato that's warm but never spills over into the "hot" Russian manner. The ever-popular Bruch Concerto No. 1, in G



Minor, always offers temptation for the soloist to lay on the sentiment, but, as in the Brahms, there's an unclinging warmth in Oleg's playing, as well as a satisfying feeling for the music's big line.

While Libor Pesek and his Liverpool players provide convincing enough collaboration in the Bruch, a lack of genuine orchestral fire and drive in the Brahms keeps that performance as a whole shy of the top rank. In terms of the recording, the soloist is beautifully in focus throughout and well balanced with the orchestra. The latter has plenty of sonic body, but I would have preferred sharper textural delineation in the climaxes. *D.H.*

BRUCKNER: Symphony No. 5
 Cleveland Orchestra, Dohnányi
 LONDON 433 318 (74 min)
Performance: Superlative
Recording: Top-class

Sprawling blockbuster that it is, the Bruckner Fifth requires a conductor to have supreme control over the music's architecture, making each episode within a movement relate unerringly to every other part. Moreover, the orchestral brass must have unlimited lung power to handle the gigantic climaxes, and refinement in the woodwind body is essential for the many episodes with a bucolic atmosphere. Above all, the music must flow like a great river, with its moments of hesitancy and occasional lingering flawlessly integrated into the main stream. Overly rigid tempos drain the music of life, but without firm underpinning the whole edifice falls apart—which has happened all too often in performances that I have heard.

To their everlasting credit, Christoph von Dohnányi and the Cleveland Orchestra have brought it all off to perfection in this recording. There is a wonderful fierceness to the main allegro of the first movement, and an atmosphere of eerie darkness prevails in the shadowy slow movement—the control of dynamics is awesome. The fluctuating and curiously uncertain moods of the scherzo are tellingly

conveyed, with a lovely pacing but no lingering in the trio section. The huge finale, with its amalgamation of sonata and double-fugue forms, is a real tour de force—I can't remember its being so thrillingly realized before, either on or off records. This is the performance of a lifetime, and the recorded sound is the best I have heard from Severance Hall. *D.H.*

DONIZETTI: L'Elisir d'Amore
(The Elixir of Love)

Devia, Alagna, Spagnoli, Praticò, others:
 English Chamber Orchestra, Viotti
 ERATO 91701 (two CD's, 129 min)

Performance: Spirited
Recording: Bright

Awelcome addition to currently available *Elisirs*, this performance is a particularly exuberant one. All the performers seem caught up in the joyousness of the piece, a quality they communicate to the listener. And herein, paradoxically, lies my only nigging reservation: The high spirits are so sustained that the performance lacks some degree of variety in mood. The unusually clear recording, tonally brilliant without sharpness, admirably captures the spirited work of the orchestra and for the most part is kind to the singers.

As Adina, the soprano Mariella Devia sings with commendable accuracy and fluidity and creates a charming and sympathetic character, although her high notes tend on occasion toward harshness (but that may be due to the brightness of the recording). As Nemorino, the young Italian tenor Roberto Alagna sings



Pianist Maria Tipo

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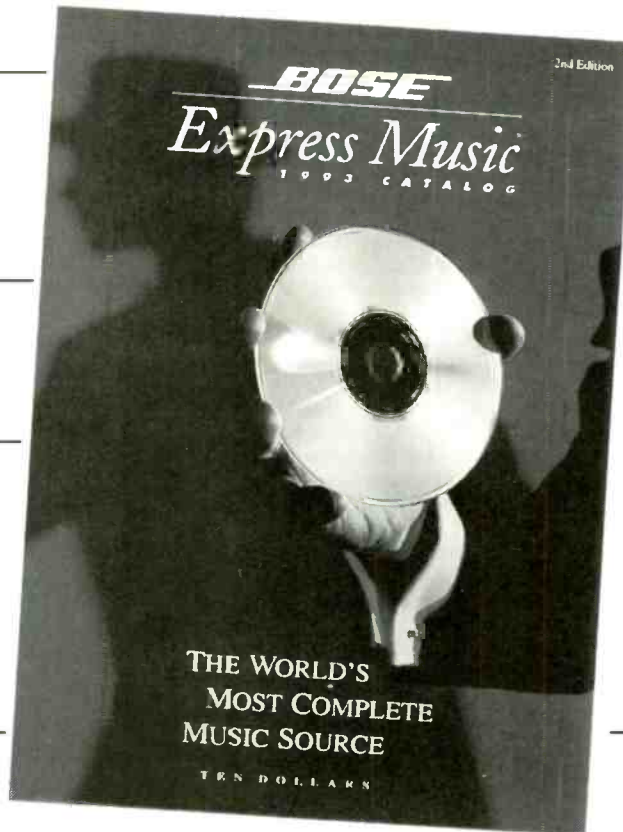
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effortlessly, winningly, and with impressive ornamentation (*fiaturata*). His aria "*Una furtiva lagrima*" is tastefully molded and affectingly delivered, and his Act I duets with Devia are particularly winning.

The baritone Pietro Spagnoli is properly bumptious and swashbuckling as Belcore, singing with notable ease and a strong sense of Donizetti's flowing line. Bruno Praticò brings to Dulcamera a resonant bass, engaging pomposity, a sure sense of comedy, and breathtaking delivery of the "patter" sequences. Francesca Provvisionato provides a clear, agile, and silvery soprano for her ingratiating Gianetta. The Tallis Chamber Choir sings with verve and palpable enjoyment.

The conductor Marcello Viotti is comfortably at home with *L'Elisir*. His tempos are crisp, his dynamics are effectively controlled, and, most important, he allows the vocal line its full measure of expression. **R.A.**



GERSHWIN: *Rhapsody in Blue*; *Cuban Overture*; "*Porgy and Bess*" Suite (*Catfish Row*); *An American in Paris*
 Levine: Chicago Symphony. Levine
 DEUTSCHE GRAMMOPHON 431 625 (67 min)
Performance: Energy, delicious schmaltz
Recording: Hard to beat

You read it right: Levine: Chicago Symphony, Levine. James Levine plays and conducts the *Rhapsody in Blue*, and he does it with dash, *élan*, and style. And, for good measure, he's using the original Ferde Grofé orchestration (made for Paul Whiteman)—the only one that should ever be used. The day is long past when symphony players from almost anywhere, let alone Chicago, have problems playing Gershwin or dealing with the stripped-down, jazzy sound of this version. Quite the contrary, these excellent musicians relish the chance to dig in, and a certain kind of energy, vigor, and enthusiasm are what this piece is all about.

Although the *Rhapsody* will command the most attention, the most fascinating part of

this album is Gershwin's own suite, orchestrations and all, from *Porgy and Bess*, dubbed "Catfish Row" by Ira Gershwin. Where has it been all this time? It includes most of the big numbers as well as the more showy instrumentals, from the overture to the fight scene and hurricane. The finale, which takes off from *I'm*

on My Way and works in half the major themes of the opera, sums it all up brilliantly. This suite is, far and away, a better (and certainly more authentic) "symphonic picture" of the opera than the hyped-up Robert Russell Bennett version, which it should replace now, forthwith, and forever.

New Christmas CD's

December always brings a wide variety of recordings featuring music of the season. From the truly sublime to the... well, lighter-hearted side of the holidays, here is a sampling of new recordings and CD reissues that we hope will bring musical cheer. —Robert Ripps

ANONYMOUS 4: On Yoolis Night
 HARMONIA MUNDI 907099 (68 min).
 Medieval carols and motets performed by an *a cappella* women's quartet.

THE BOSTON CAMERATA: An American Christmas
 ERATO 92874 (61 min). Carols, hymns, and spirituals dating from 1770 to 1870, with the choruses of the Schola Cantorum of Boston and Brown University joining the Boston Camerata players, all directed by Joel Cohen.

CHRISTMAS TREASURES
 RCA VICTOR 61867 (72 min). This digitally remastered collection of "Living Stereo" recordings from 1957-1966 features some of the label's greatest artists, including Mario Lanza, Leontyne Price, Arthur Fiedler, Marian Anderson, Fritz Reiner and the Chicago Symphony, and the Robert Shaw Chorale.

CHRISTMAS WITH THE MORMON TABERNACLE CHOIR
 LASERLIGHT 12 198 (42 min). The famous choir is accompanied by brass, percussion, and organ in this all-new digital collection.

PLACIDO DOMINGO, DIANA ROSS, JOSE CARRERAS: Christmas in Vienna
 SONY 53358 (63 min). Two of the famous "three tenors" joined Miss Ross for a



concert of holiday music arranged and adapted by Lalo Schifrin. Broadcast live last December, the recorded program will air again this month on PBS stations (check local listings). Available in five formats: CD, analog cassette, videocassette, laserdisc, and MiniDisc.

GLORIAE DEI CANTORES: What Cheer!
 GDCD 012 (67 min, from Paraclete Press, Orleans, MA 02653; 1-800-451-5006). Traditional English and American carols sung "to the glory of God" by the forty-four-voice Gloriae Dei Cantores choir.

THE NEW YORK POPS: Christmas in the Country
 ANGEL 54891 (60 min). Skitch Henderson leads the New York Pops in fifteen selections, including a first recording of an early piece by Erich Wolfgang Korngold (*King's Row* and other great film scores) titled *The Snowman*.

SIMPHONIES DES NOELS
 DORIAN 90180 (72 min). A collection of Baroque Christmas concertos by Corelli, Charpentier, Sammartini, and others played on instruments of the time by Les Violons du Roy led by Bernard Labadie.



Domingo, Ross, and Carreras make merry in Vienna

The *Cuban Overture* and the inevitable *American in Paris* are hardly lesser attractions. Both are played with energy, brilliance, and, where required, schmaltz. That is not a criticism: Gershwin without schmaltz is bread without butter, a hot dog without mustard, salsa without spice. *E.S.*

HAYDN: Symphonies Nos. 82, 83, 85

Lausanne Chamber Orchestra, Lopez-Cobos
DENON 75356 (65 min)

Performance: Neat and trim

Recording: Very good

Jesús Lopez-Cobos offers the three most popular of the six symphonies Haydn composed for the Paris Loge Olympique in 1785-1786. All three have nicknames: No. 82 is known as "The Bear," No. 83 as "The Hen," and No. 85 as "The Queen (of France)." The first two symphonies, both colorful and lively works, launch straight into the musical matter at hand with the ascending arpeggio figure known as the "Mannheim rocket." As befits royalty, No. 85 has a stately introduction, and its overall refinement and sophistication look forward to Haydn's London symphonies, begun a half-dozen years later. The "romanze" slow movement (an unusual title for the time) features a French folk-song melody.

Lopez-Cobos's readings, excellently recorded with a modern-instrument chamber group, are trim and vital, and his are the only versions of Nos. 82, 83, and 85 available together on a single CD. On that basis, I'd call this disc a very good buy. *D.H.*



PERGOLESI: Stabat Mater; Salve Regina

A. SCARLATTI: Salve Regina

Anderson, Bartoli: Sinfonietta de Montréal,
Dutoit

LONDON 436 209 (69 min)

Performance: Beautiful

Recording: Excellent

The literal centerpiece here is the *Stabat Mater* of Giovanni Battista Pergolesi (1710-1736), no stranger to records and always welcome. Several current recordings combine the soprano soloist with a countertenor, adhering, presumably, to historical authenticity. Conductor Charles Dutoit opts for the more conventional soprano-and-mezzo partnership, and given the presence of June Anderson and Cecilia Bartoli, I must acclaim his choice. With their clearly contrasting timbres and well-matched phrasing, their voices form an angelic blend. They are supported by a chamber orchestra of moderate size using modern instruments—a decision that will get no objection from this corner. In his choice of tempos,



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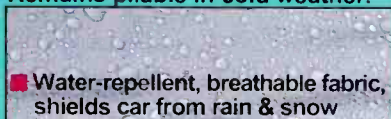
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however. Dutoit may have been influenced by the "period" trend: His brisk pacing of the earlier sections seems contrary to the lamenting tone of the texts.

It was a splendid idea to fill the disc with two versions of the *Salve Regina*, since Pergolesi's bears a clear structural resemblance to that of the much older master, Alessandro Scarlatti. Written about ten years earlier than Pergolesi's, it dates from around 1720, during this incredibly prolific composer's late period, and combines inspired *arioso* writing with melodic declamation. *G.J.*



PROKOFIEV: Symphony No. 5; Scythian Suite

City of Birmingham Symphony, Rattle
EMI 54577 (64 min)

Performance: Highly charged
Recording: Brilliant

I have always considered Prokofiev's wartime masterpiece the only Russian symphony that can be spoken of in the same breath as the Beethoven "Eroica." Some conductors have espoused this view rather too literally, making the first movement sound pompous rather than genuinely heroic. Simon Rattle does not fall into this trap. He sets just the right pace most of the way, though he does slacken it a bit too much at the coda. The scherzo is taken at a sizzling pace—perhaps a mite too sizzling for some tastes. The poignant and gripping slow movement fares well here, with an outstandingly nuanced and poetic treatment of the coda. The mood is sustained to fine effect in the ruminative introduction to the finale, recalling earlier thematic material, and the work concludes in a blaze of orchestral glory.

The youthful *Scythian Suite* gets off to a splendidly rabble-raising start that will take you right out of your chair. This is the first recording I've heard that measures up to Antal Dorati's memorable 1958 reading with the London Symphony on Mercury (now reissued on CD). The explosive "Dance of the Evil Spirits" second movement is a spectacular exhibition of orchestral virtuosity, but the tempo is so rapid that the ear cannot properly assimilate the all-important string passagework. The night music that follows is gloriously spooky, and the final sunrise movement is as gorgeous as one could ask—up to the very final chord, which I find oddly inconclusive.

The recorded sound in both works is brilliant as well as wonderfully resonant. Though I would have liked a bit more violin sonority in the symphony, the Birmingham players are on their toes all the way. *D.H.*

SCHUMANN: Piano Concerto TCHAIKOVSKY: Piano Concerto No. 1

Engerer: Royal Philharmonic, Krivine
DENON 75290 (69 min)

Performance: Excellent Schumann
Recording: Warm and full

Both Brigitte Engerer and Emmanuel Krivine seem not only at home with the Schumann concerto but truly in love with it. So instinctively right and persuasive are they in every phrase, and so productively do they build on each other's incandescent contributions, that the listener can only be swept along, happily and unresistingly.

The Tchaikovsky, which comes first on this disc, is a solid, musicianly performance, always tasteful but a little sleepy. It does have moments of great beauty, but other performers—especially Gary Graffman and George Szell on Sony—have succeeded in giving us both elegance and vitality in this work.

The recording itself, for all its appealing warmth and fullness, is a bit wanting in respect to orchestral detail. The horn phrases in the finale of the Schumann, for example, and several other passages for the winds tend to be obscured by the veil of strings. *R.F.*



TAKEMITSU: A Way A Lone BARBER: String Quartet, Op. 11 BRITTEN: String Quartet No. 2

Tokyo Quartet
RCA VICTOR 61387 (61 min)

Performance: Gutsy
Recording: Warm

Toro Takemitsu's *A Way A Lone*, written for the Tokyo String Quartet's tenth anniversary in 1981, is the sort of modern music that you can admire without liking very much. It is a bleak and unpromising opening to a recording that then delivers two of the best string quartets ever produced outside of central Europe: the powerful Barber (with the famous Adagio in its rightful place as an exquisite interruption of the dramatic outer sections) and the highly original, dramatic Britten Second with its long final Chacony movement, a kind of contemporary (that is, 1945 contemporary, but still with bite) tribute to Purcell. Gutsy performances, warm recordings. *E.S.*

TCHAIKOVSKY: The Sleeping Beauty

Kirov Orchestra, Gergiev
PHILIPS 434 922 (three CD's, 164 min)

Performance: Mostly wonderful, but . . .
Recording: A little hard-edged

This presentation of the uncut score for the work many regard as the greatest of Tchaikovsky's three ballets is mostly wonderful, but

(Continued on page 134)

QUICK FIXES

BEETHOVEN: Piano Concerto No. 1; Sonata No. 15

De Larrocha: London Symphony, Thomas RCA VICTOR 61676 (59 min)
Most performances I know of the Beethoven Piano Concerto No. 1 are on the crisp side, but Alicia de Larrocha prefers an easy pacing, to which she brings her always elegant passagework. Fine support from Michael Tilson Thomas. The "Pastoral" Sonata, Op. 28, is serenely Classical, with the "walking tune" andante a high point. Good sound all the way. *D.H.*

GLASS: Itaipu; The Canyon

Atlanta Symphony, Shaw SONY 46352 (56 min)
Written in 1989, Philip Glass's choral work *Itaipu*, inspired by a huge hydroelectric dam in Brazil, is a kitschy, 40-minute-long amalgam of amelodic, monotonous vocal lines, world-music influences, and swirling wind writing borrowed from *The Moldau*. One can only be grateful that *The Canyon*, the 1988 tone poem that fills out the disc, fails to imitate the *Grand Canyon Suite*. Conductor Robert Shaw and his Atlanta forces are good sports, producing a handsome recording of fifth-rate music. *D.P.S.*



HAYDN: Symphonies No. 92 ("Oxford") and No. 96 ("Miracle")

Vienna Philharmonic, Previn Philips 434 915 (49 min)
It is easy to say what these performances are not: not ultra-brilliant or virtuosic, not in the early-music vein, not highly romanticized or quirkily personal. What they show is a love of Haydn and a homegrown feeling for the roots and the quality of the music. This CD will not sell Haydn to the non-believers, but it will please the already converted. *E.S.*

REBELO: Lamentations; Vesper Psalms

Huelgas Ensemble, Nevel SONY 53115 (64 min)
The little-known Portuguese composer João Lourenço Rebelo (1610-1661) made a wildly eclectic mixture of Gesualdo-style chromaticism in the *Lamentations* and used lots of Monteverdian techniques in the *Vesper Psalms*. Paul Van Nevel is a robust interpreter, and he has included female sopranos in the chorus, which may not be entirely authentic but does give unusual luster and texture to the sound. *D.P.S.*

SIBELIUS: Symphony No. 2; The Swan of Tuonela; Valse Triste; Andante Festivo

Oslo Philharmonic, Jansons EMI 54804 (61 min)
Mariss Jansons's reading of the Sibelius Second is not quite as persuasive as his recent account of the First, but it's a satisfying one—dramatic, well-balanced, free of excess, propelled by a fine sense of momentum. First-rate playing and vivid, open-air sonics in all four works. *R.F.*



VERDI: Famous Opera Choruses

Accademia Nazionale di Santa Cecilia, Rizzi TELDEC 90267 (61 min)
The eleven choruses here include the extremely familiar ones from *Il Trovatore* and *Aida* and the indispensable "Va, pensiero" from *Nabucco*. Equally attractive and effective are the sparkling "Fuoco di gioia" from *Otello*, the solemnly sinister choral passage from the auto-da-fé scene of *Don Carlo*, and the rousing choruses (saturated in Verdi's nationalist sentiments) from *I Lombardi*, *Macbeth*, and *La Battaglia di Legnano*. Carlo Rizzi drives his forces too hard at times, and the results are not the last word in polish, but the performances are exciting and well-recorded. *G.J.*

ENSEMBLE WIEN-BERLIN

Opera Fantasies
SONY 52564 (62 min)
This program of medleys of operatic hits transcribed for piano with flute, clarinet, oboe, bassoon, or horn is played with great gusto by the young Austrian pianist Stefan Vladar and soloists of the Ensemble Wien-Berlin. The paraphrased operas are *Carmen*, *Der Freischütz*, *Porgy and Bess*, *Rigoletto*, and Wagner's *Ring*, of all things! The fantasy on melodies from the *Ring* for piano and horn slips amusingly into camp, and the whole program is a lot of fun. A must for opera fans. *William Livingstone*

SERGEI NAKARIAKOV

Trumpet Concertos
Nakariakov; Lausanne Chamber Orchestra, Lopez-Cobos TELDEC 90846 (56 min)
Two trumpet concertos from the Classical period (by Haydn and Hummel) and two from post-World War II France (by André Jolivet and a certain Henri Tomasi) played with grace, *savoir-faire*, and virtuosity by a sixteen-year-old Russian prodigy with the Lausanne Chamber Orchestra conducted by the redoubtable Jesús Lopez-Cobos, and all of it nicely recorded by Teldec. I don't think music gets very much fresher or livelier than this. *E.S.*

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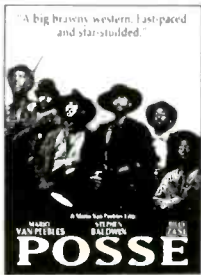


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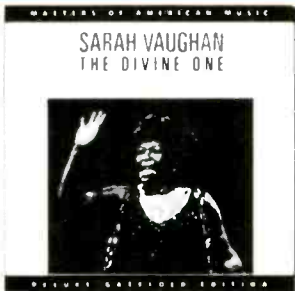


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CIRCLE NO. 37 ON READER SERVICE CARD

not as surpassingly so as might have been hoped. Valery Gergiev once again has the advantage of working with an orchestra he has conducted in staged productions of this repertory, in a house (St. Petersburg's Maryinsky Theater) whose performing tradition goes back to the work's premiere in 1890. His pacing is unfailingly enlivening, his affection for the music evident in every bar; the orchestra sounds world-class, and the recording itself is gorgeous, if a little hard-edged here and there.

And yet there are disappointments. The balance in the Crumb Fairy's enchanting little variation in the Prologue's pas de six is frustratingly misjudged. Whether the fault is the recording team's or Gergiev's own, the theme is virtually inaudible, leaving the accompaniment figure to carry the piece. As serious a lapse to my mind is that the set's track breakdown and documentation are not as comprehensive as they might be. How does one find the Crumb Fairy's variation, for example, or know exactly which part of the work one is hearing? The main track listing gives no intimation that the big numbers may be composed of several small ones, nor are these sections indexed.

Much as there is to enjoy from Gergiev's performance, the budget set of the complete ballet on Naxos, with a Czech orchestra under Andrew Mogrelia, apparently a very young English conductor, has more than just economy to recommend it. *R.F.*



Collection

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Performance: Stunning
Recording: First-rate

This CD is no mere grab-bag of cello encores. Yo-Yo Ma and his ace collaborators—Jeffrey Kahane and Gilbert Kalish on piano, Lynn Chang and Ronan Lefkowitz on violin—have given us a wonderfully varied and substantial program of twentieth-century American chamber music, beginning with Leonard Bernstein's first published work, the 1942 Clarinet Sonata. The two movements display Bernstein's lyrical and jazzy aspects in

pristine state, though Ma's cello transcription, done with the composer's blessing, sounds quite different from the first, 1944 recording by clarinetist David Oppenheim and Bernstein himself. Ma's partner is Kahane.

The Triptych by Ma's Harvard mentor, Leon Kirchner, composed for Ma and Chang and first performed by them in 1988, is cast in Kirchner's most highly developed post-Bartok expressionist language. A stunning earful, it offers 9 minutes of incomparable solo-cello virtuosity, then two duo movements, the second full of unexpected contrasts.

A lighter touch is provided by Jascha Heifetz's arrangement of three Gershwin preludes, transcribed by Ma. His cello versions are no less effective than Heifetz's violin ones, and they are performed with equal suavity. Kahane is again the pianist.

Finally, Lefkowitz and Kalish join Ma for the tautest and most brilliant reading I have yet heard of the Ives Trio for Violin, Cello, and Piano (1904-1911). The first movement is a neat piece of musical acrobatics, with the initial pages played by cello and piano right-hand, followed by a section for violin and piano left-hand; the two sections are superimposed to finish off the movement. The scherzo is a marvelous collage of Yale college tunes, and the very substantial finale has both hymn-tune and transcendentalist elements.

Offering an unusual and most fulfilling listening experience, this collection is a "must" for lovers of chamber music. *D.H.*

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—William Livingstone

DVORAK: Symphony No. 8; Serenade for Winds.

BEETHOVEN: Octet for Winds. Berlin Philharmonic, André Previn. RCA. No visual gimmickry mars the presentation of this popular symphony played by a great orchestra, nor the excellent chamber-music performances by the orchestra's wind players that follow it.

HOLST: The Planets. Philadelphia Orchestra, Eugene Ormandy. RCA. The director Ken Russell has created a kaleidoscope of documentary film footage of people making love or war or enjoying sports or nature to match the moods of the sections devoted to the different planets. Visually exciting with very good sound.

MENDELSSOHN: Symphonies No. 3 ("Scottish") and No. 4 ("Italian"); Violin Concerto. Kyung-Wha Chung; Chicago Symphony, Georg Solti. LONDON. This video performance of three mainstays of the Romantic repertoire is one to play over and over again because of the brilliance of this orchestra, the elegance of this soloist, and the vitality of this conductor.

MOZART: The Magic Flute. Kathleen Battle, Luciana Serra, Francisco Araiza, Manfred Hemm, others; Metropolitan Opera Chorus and Orchestra, James Levine. DEUTSCHE GRAMMOPHON. The colorful sets and costumes (designed by David Hockney), the singing of an international cast, and the playing of the excellent orchestra under its artistic director combine with Mozart's magic to make this a treat for eye, ear, and spirit.

MOZART: Serenades. Bavarian Symphony, Colin Davis. RCA. The Reichssaal in Regensburg, Germany, provides an attractive visual context for this concert of three lighthearted serenades, including the *Gran Partita* and the familiar *Eine Kleine Nachtmusik*.

PUCCHINI: Tosca. Catherine Malfitano, Placido Domingo, Ruggero Raimondi, others; RAI Chorus and Orchestra, Zubin Mehta. TELDEC. Performing on the actual Roman sites where the story of *Tosca* takes place adds extra realism to this searing interpretation of this durable melodrama. The telecast won three Emmy Awards.

VERDI: Don Carlo. José Carreras, Fiamma Izzo d'Amico, Ferruccio Furlanetto, Agnes Baltsa, others; choruses, Berlin Philharmonic, Herbert von Karajan. SONY. Karajan's legacy for home video includes this stirring performance (from the Salzburg Easter Festival of 1986) of Verdi's complex drama of sex, politics, and religion in sixteenth-century Spain.

VERDI: Macbeth. Leo Nucci, Shirley Verrett, Samuel Ramey, others; Chorus and Orchestra of the Teatro Comunale di Bologna, Riccardo Chailly. LONDON. Not a staged performance, this moody film of Verdi's early Shakespearean masterpiece has extraordinary cinematic value added to quite effective vocal and dramatic interpretations. Great witches!

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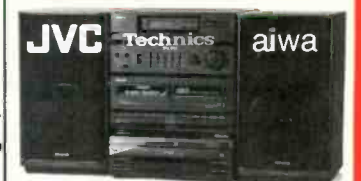


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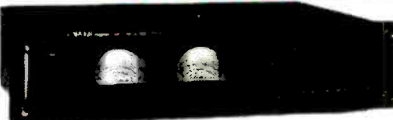
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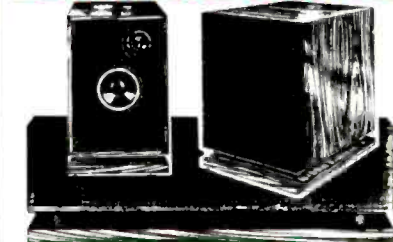
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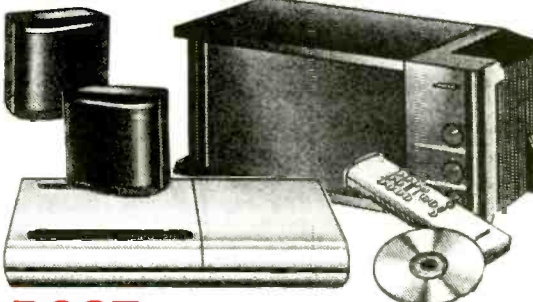
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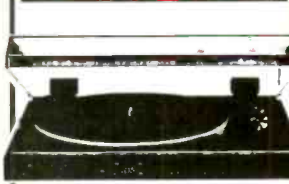
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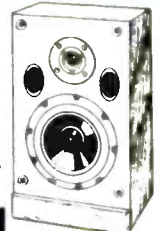
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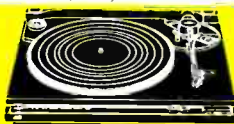


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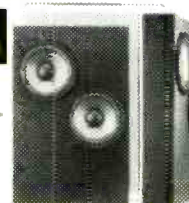
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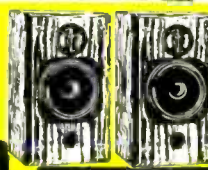


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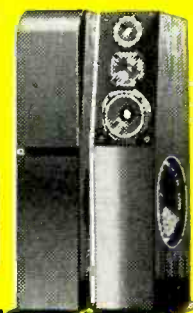
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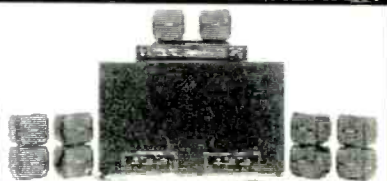
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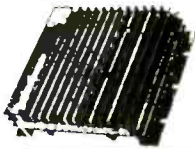
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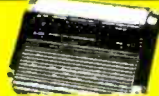
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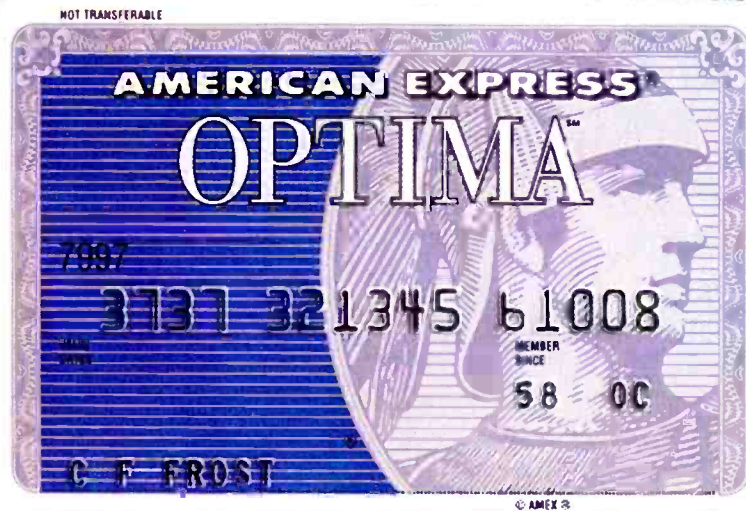
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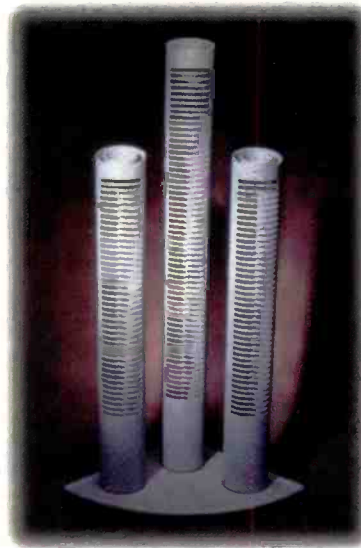
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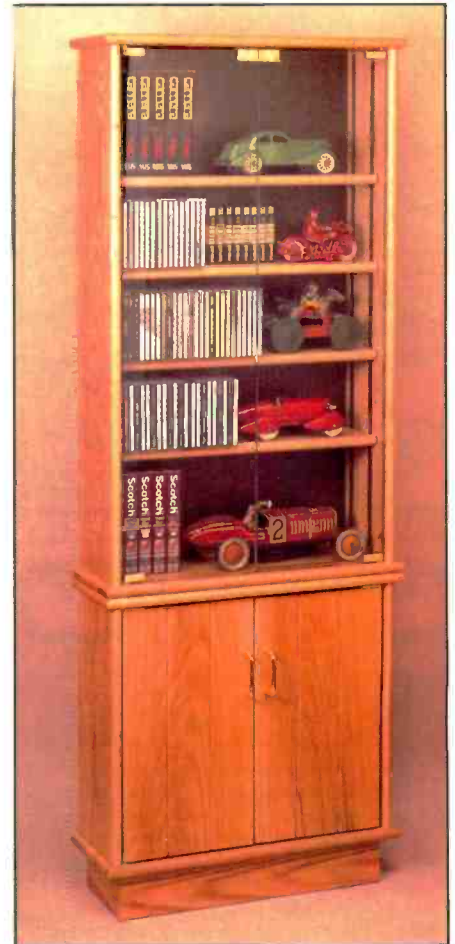
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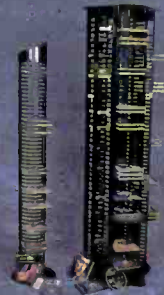


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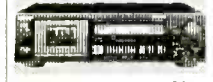
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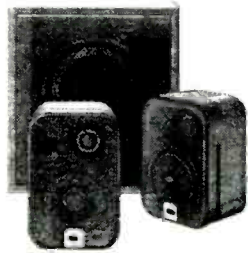
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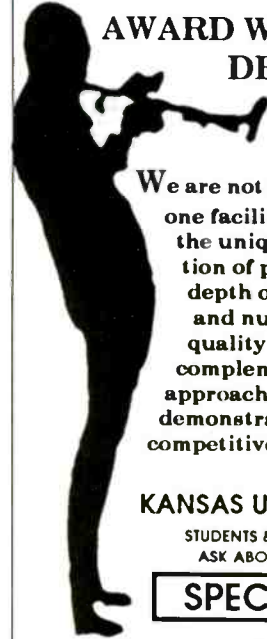
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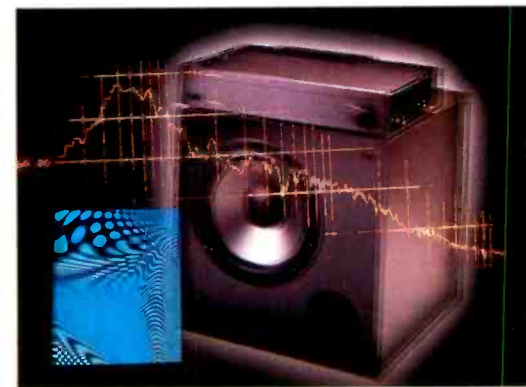
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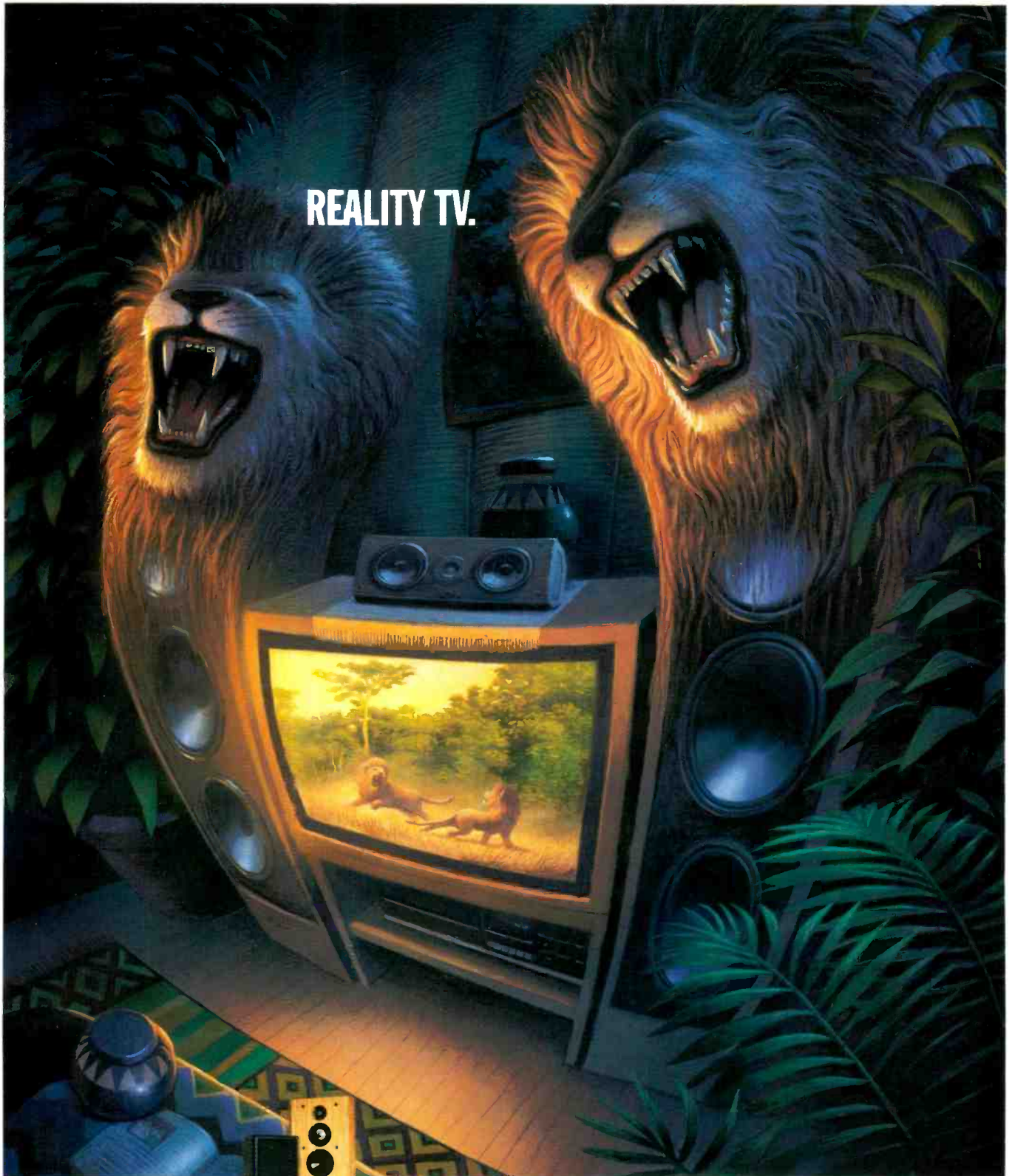
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