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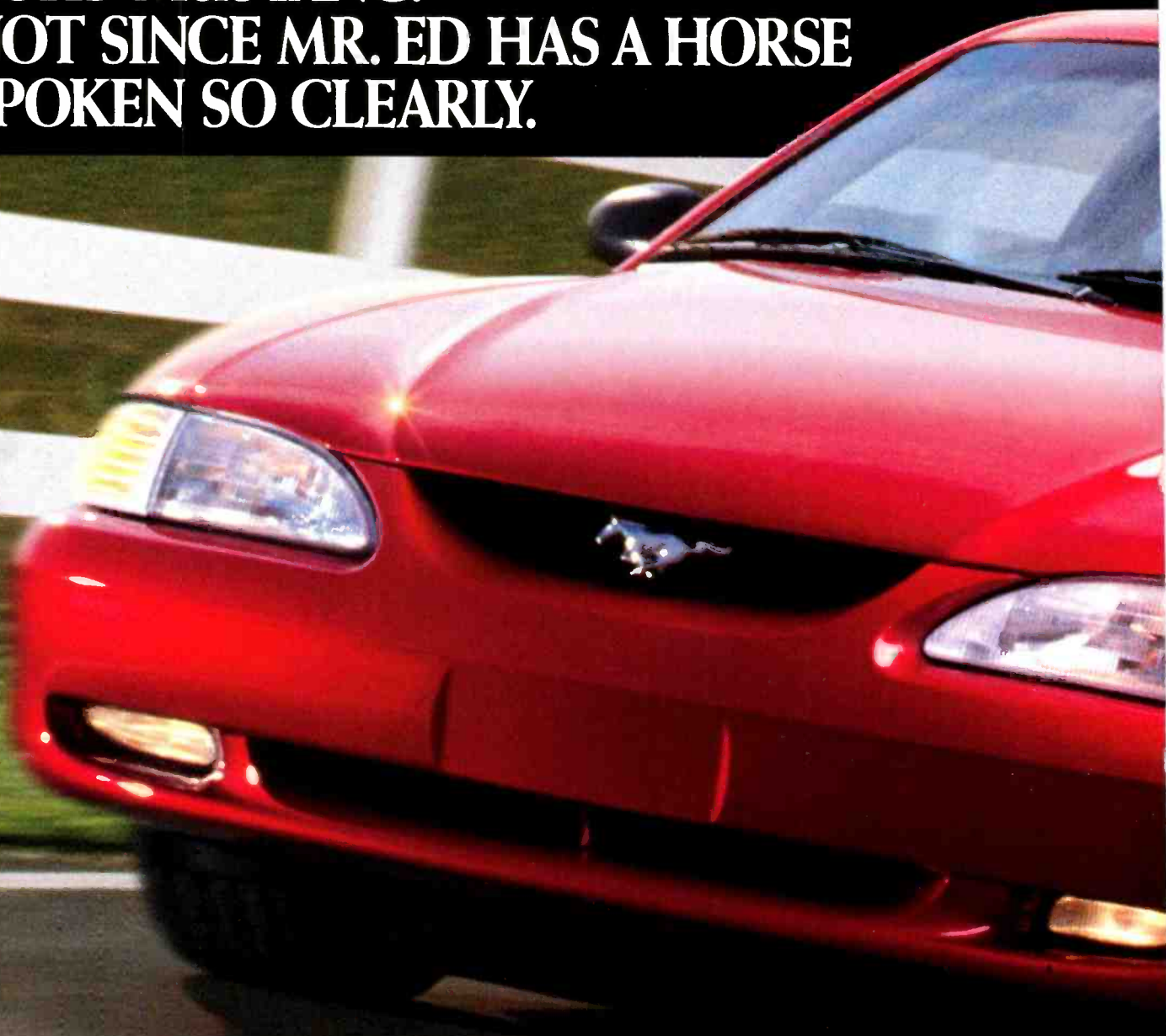
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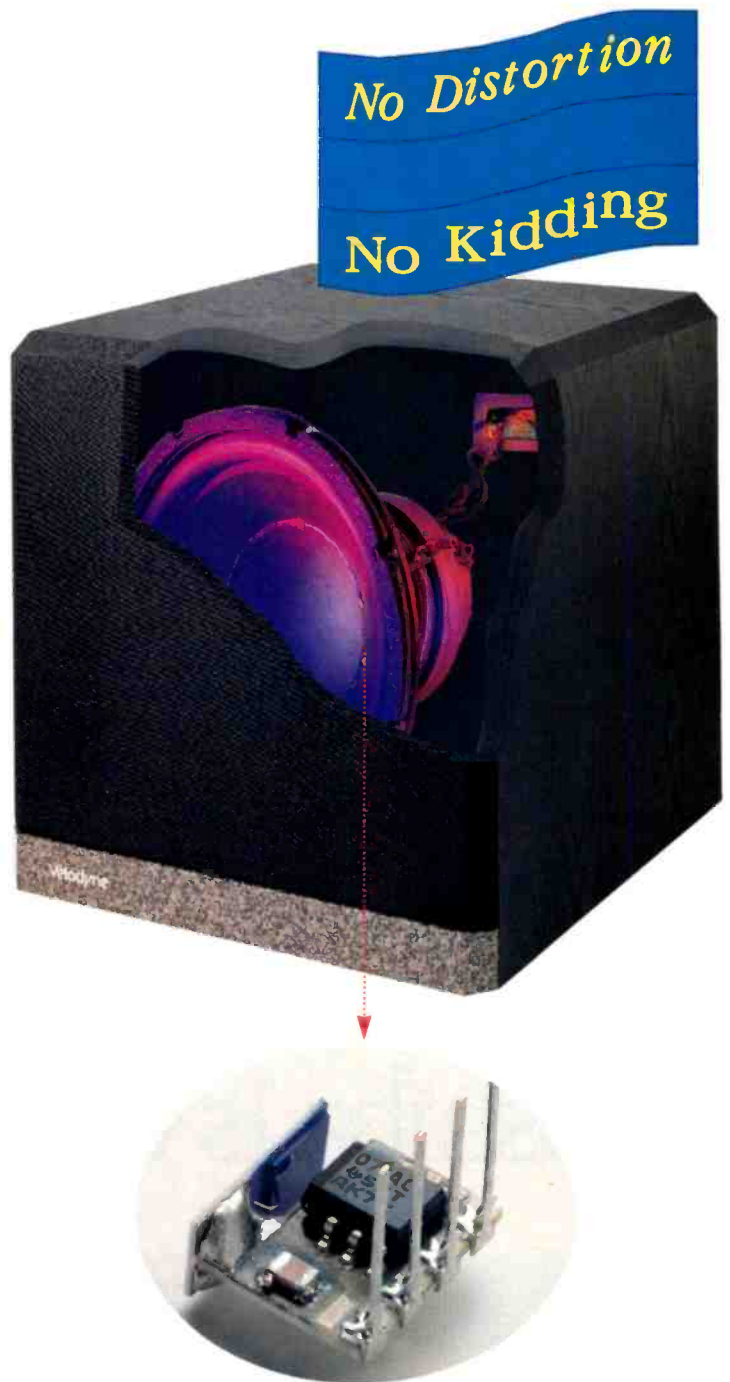
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Photograph by Jook P. Leung

Stereo Review

INCORPORATING HIGH FIDELITY

March 1996

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BULLETIN

BY BOB ANKOSKO & WILLIAM LIVINGSTONE

DVD STORMS CES

In an extraordinary display of support for a product that won't even see the light of day for at least six months, ten companies rolled out prototype digital videodisc (DVD) players at the recent Winter Consumer Electronics Show. Citing price tags of \$499 and \$599, respectively, RCA and Toshiba said they plan to ship DVD players to dealers in September. Pioneer targeted a fall release, while Sony, Philips, Denon, Onkyo, Fisher, Samsung, and Goldstar said either late '96 or early '97. At least 200 DVD movie titles, featuring better-than-laser-disc picture quality and six-channel Dolby Surround AC-3 soundtracks, are expected when the first players hit store shelves.

Meanwhile, Philips and other companies are working on a copy-inhibit system for DVD players that would prevent digital copying of the discs. No word yet on the system's chances for adoption. Don't miss "Show-stoppers" in our next issue for a look at the hottest products from the Winter CES.

NONSTOP NET MUSIC

Classic KING FM in Seattle claims to be the first radio station in the world to broadcast classical music on the Internet 24 hours a day. The station invites listeners to check out its Web site at <http://www.king.org>.

YOUNG ATTITUDES

A lack of family structure is the most pressing issue on the minds of Generation X, according to Fuji Tape's ongoing "Voices of Young America" survey of 18- to 24-year-olds. The study also revealed that members of this age group spend discretionary dollars about the same way previous generations did: 33 percent spend most on clothes, 29 percent on "dining out,"

and 16 percent on music. Of those surveyed, 61 percent agreed that today's music affects social behavior. A job as CEO of a major corporation was the most attractive career goal for a whopping 41 percent. A career as a rock star appealed to a mere 5 percent.

A/V DIGEST

The Consumer Electronics Manufacturer's Association and the Recording Industry Association of America have formed task forces to explore audio-only applications for DVD. . . . Dolby Labs has developed a version of Dolby Pro Logic for computers. Dolby Surround Multimedia doesn't require center and surround speakers. . . . Citing profit woes, tape pioneer 3M said the division that markets Scotch brand audio and video cassettes will be phased out by late 1996.

NARAS HONORS

The National Academy of Recording Arts & Sciences has announced its Lifetime Achievement Awards to Dave Brubeck, Marvin Gaye, Sir Georg Solti, and Stevie Wonder. Historic recordings inducted into the Academy's Hall of Fame are *Chimes Blues* by King Oliver's Creole Jazz Band (1923), *Chattanooga Choo Choo* by the Glenn Miller Orchestra (1941), Beethoven's *Violin Concerto* performed by Jascha Heifetz and the NBC Symphony led by Arturo Toscanini (1940), *Bei Mir Bist Du Schon* by the Andrews Sisters (1938), *Flying Home* by Lionel Hampton and His Orchestra (1942), and *Take Five* by the Dave Brubeck Quartet (1960).

MUSIC NOTES

Garth Brooks, Mary Chapin Carpenter, Ronnie Dunn, Vince Gill, and Alan Jackson have been honored by the Country Music Association because each has written three No. 1 hit songs in a



CD PLAYERS: TIME IS ON YOUR SIDE

Just how reliable are CD players? To find out, Swedish magazine *Hifi & Musik* lined up seven machines in February 1991 and put each of them in continuous repeat mode playing the same CD. The players, which included a selection of budget-to-high-end models from six well-known brands, were monitored for mechanical operation and sound quality. First to fall were three of the least expensive units, which lasted between 1,500 and 3,600 hours (about two to five months) before succumbing to various electrical failures. But the others kept right on spinning, with the next collapse occurring in a midprice unit at 24,800 hours, nearly 3 years into the test!

Finally, it came down to a shootout last fall between two models. The victor was the Philips CD614 over the Pioneer PD-93 by 14 days — incredibly, the least expensive player in the group (\$310) beating out the most expensive (\$1,950). The microprocessor in the Philips fainted, and the Pioneer wore out a ball bearing in its transport. Total time for the Philips machine was 39,672 hours, or more than 4½ years. Discounting the cost of electricity, that's 0.008 cent per hour of play — a bargain by any standard.

— Reported by Hansi Danroth

single year. . . . Leonard Slatkin, newly appointed music director of the National Symphony, has made his first recording with that orchestra, John Corigliano's *Symphony No. 1*, to be released on RCA Red Seal. . . . Delos Records inaugurates its Virtual Reality (VR²) series with the

February CD release of Glière's *Symphony No. 2* and *Red Poppy Suite* performed by the New Jersey Symphony conducted by Zdenek Macal. VR² recordings are said to create a more spacious sound, whether played over two-channel systems or surround setups.

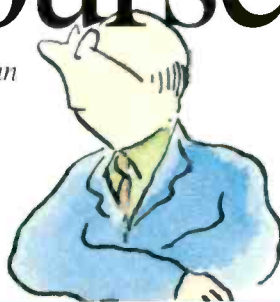
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— excerpts from *Audio Magazine*, by Anthony H. Cordesman

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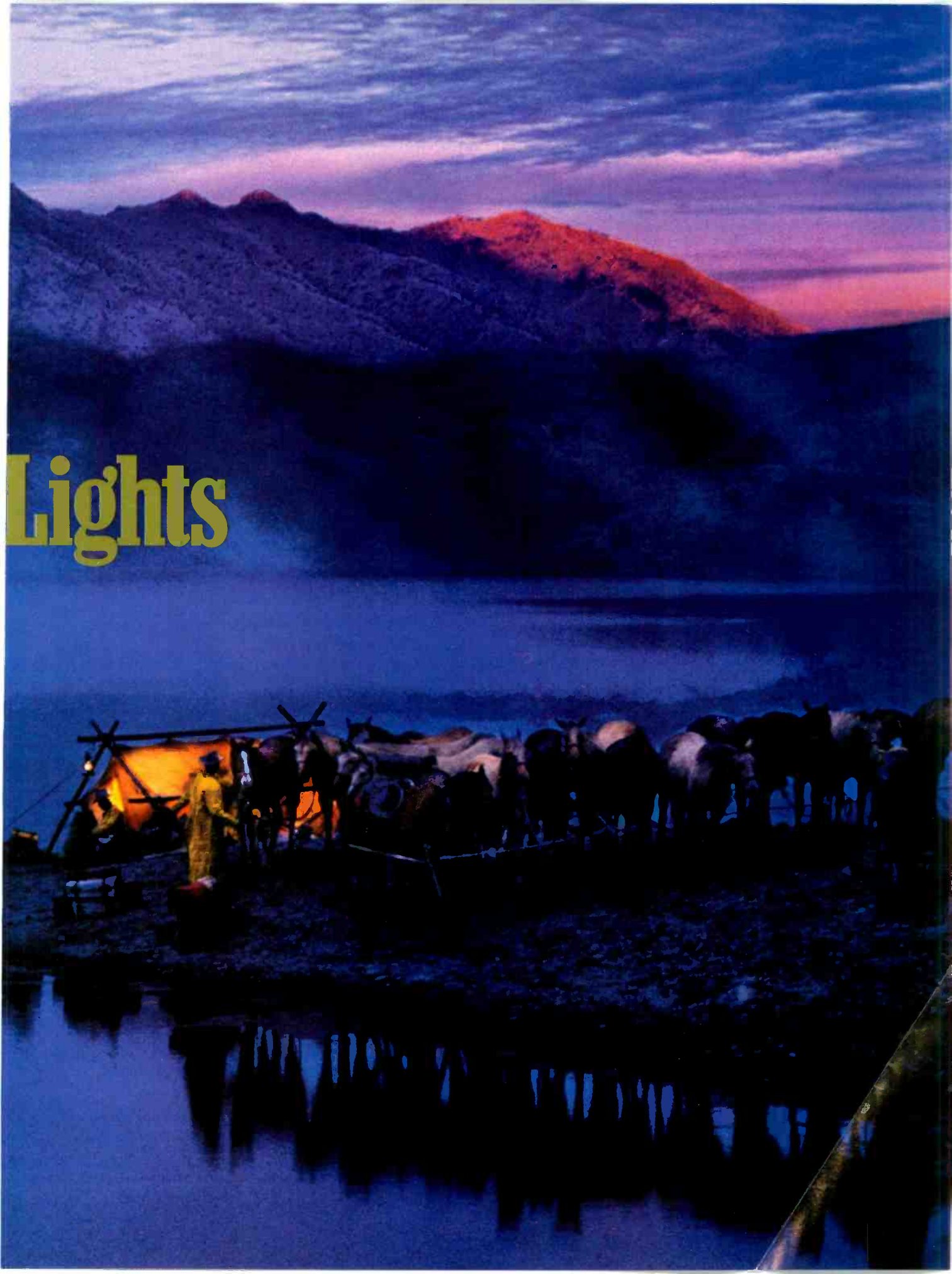
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LETTERS

Romance of the Record

I'd like to thank Brad Meyer for his unusually balanced article, "The Romance of the Record" (January), which addressed a number of issues in the digital vs. analog debate that are often misunderstood. Interestingly, it was the "musical" sound of the LP that first got me interested in high-end audio reproduction. I just couldn't understand why my "state of the art" CD player didn't sound as pleasing as my friend's high-end turntable system.

Mr. Meyer did an admirable job in revealing how the "better" sound of the LP compared with the CD may actually be due to euphonic colorations from the medium rather than more accurate reproduction of the source signal. He made a serious mistake, however, in saying that CD's "deliver to the consumer a replica of the master tape." Just because the LP may not faithfully reproduce a master tape does not imply that the CD succeeds. And the CD's lack of measurable flutter, distortion, or change in frequency balance does *not* prove that it has no colorations — these terms and measurements were designed to describe problems with analog recording media. Digital media may have a host of different colorations yet to be resolved.

DAVID BOULET
Wilmington, DE

In "The Romance of the Record" Brad Meyer said that under the best playback conditions the LP still had more noise than the CD. When you add up all the imperfections of the LP, it's a source of music few people want. One answer to the dilemma of LP's was to equalize the sound to suit your taste. Maybe what little the CD doesn't seem to have could be put on a computer chip so that diehard LP fans could select "LP style" playback.

TIM MASTEN
Bloomington, IL

Brad Meyer found that a \$14,000 turntable-equipped system and a specially mastered LP were needed to equal the quality of a standard CD — some of the time. But his exhaustive technical comparisons weren't necessary. The reason some people are still in love with vinyl is because they're snobs. They're the same ones who think the physical heat of vacuum tubes carries over into "warmth" in reproduced music. They probably wear Rolexes, too, "because they keep better time."

STEVE KOHN
Wahiawa, HI

Hi-Fi VCR's

Jim Barry's "Hi-Fi VCR's: Brave New World" (December 1995) failed to address two issues that are most important to an audiophile in selecting a hi-fi VCR:

1. *The ability to set one's own recording levels.* Without this feature, you must rely on automatic circuitry that can flatten dy-

amic range — hardly what you want when recording near-digital-quality sound.

2. *The presence or absence of an automatic dbx noise-reduction system.* Low-cost machines with this feature compress sound during recording, then expand it by the same ratio during playback. That's fine if you always use the same machine for recording and playback, but it makes the tapes totally incompatible with other hi-fi VCR's, including most high-end machines.

PAUL S. GUNDLACH
New York, NY

Polk Audio SRT Speakers

Thank you for David Ranada's wonderful review of our Signature Reference Theater speaker system in January.

One clarification: Mr. Ranada pointed out the setup challenges presented by the SRT system's weight and complexity. Readers should be aware that all Polk SRT dealers will deliver and set up the system for buyers. Also, SRT dealers and owners have access to exemplary technical support by calling a toll-free number published in the SRT owners manual.

MATTHEW S. POLK
Chairman, Polk Audio
Baltimore, MD

The special test report on the Polk Audio SRT system contains what appears to be an error: "The drivers are switchable between dipole (in-phase) and bipole (out-of-phase) operation." Isn't it the other way around?

BOBBY SANCHEZ
Miami, FL

Yes. Dipole speakers operate out of phase, bipoles in phase. We regret the error.

Satellites over Hawaii

When will USSB or another company offer Digital Satellite System (DSS) service for Hawaii? I don't want to spend \$3,000 or more on a large dish if DSS will be available soon. If Alaska can get DSS (December "Letters"), why can't Hawaii? Are any new satellites scheduled to be deployed over Hawaii?

JON BEYMER
Hilo, HI

The two satellites currently used by Direct TV and USSB, the companies that broadcast DSS programming, are in stationary orbit above the continental U.S., and the curvature of the earth prevents their signals from reaching Hawaii. Alaskan DSS subscribers are on the fringe of the satellite coverage area and can receive DSS signals using a dish that's significantly larger than the 18-inch dish suitable in the lower forty-eight states.

At this writing, neither DirectTV nor USSB has announced plans to launch a satellite to serve Hawaii. But AlphaStar, based

in Greenwich, Connecticut, has said that before this summer it will introduce a competing digital satellite service that will cover all fifty states. AlphaStar's medium-power satellite is already in orbit, and reception is said to require a 30-inch dish in the lower forty-eight states, a 37-inch dish in most of Hawaii, and dishes ranging from 37 to 71 inches in Alaska. Receiving hardware and programming will be sold by satellite-dish dealers and Amway representatives.

In the Hole

Steve Simels's review of Hole's "ask for it" (January) was outrageous! Obviously he does not like Hole or Courtney Love. I can live with that, but when he decides to throw in a bit about Kurt Cobain that doesn't even belong, I draw the line. Hole is a terrific and creative band that can stand on its own without any side comments about Kurt Cobain. Courtney Love is a woman of great talent who does not have to depend on the achievements of her late husband, and it is pointless to keep bringing him into reviews of her work.

ERIKA D. VOSKES
Whitehouse, OH

Onkyo AC-3 Upgrade

Like other magazines, you have overlooked the very first AC-3-ready receiver on the market, the Onkyo TX-SV919THX. When I bought one about six months ago Onkyo had no AC-3 decoder in the works, so I got the Yamaha DDP-1. The input Onkyo provided, however, was designed for a DB-25 computer cable, and the Yamaha and all other external decoders so far use RCA-type outputs. I called Monster Cable and was able to buy a customized interconnect with RCA plugs on one end and a DB-25 connection on the other. Now I have AC-3, and it sounds great! I hope my experience will encourage other Onkyo SV919 owners to upgrade to AC-3.

STEPHEN LAUTERBACH
Mission, KS

Onkyo says its own ED-901 outboard AC-3 decoder will be available this spring for "under \$800."

Correction

An item in December's "Bulletin" incorrectly characterized the EchoStar direct-broadcast satellite system as a medium-power service using a 24-inch dish. It is high-power and uses an 18-inch dish. □

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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Audio Magazine

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"For the home or office, *SoundWorks* hits the right note."

PC Magazine

SoundWorks' great sound and compact size makes it ideal for many situations or locations where a large, conventional sound system doesn't make sense. It has magnetically shielded satellite speakers, so *SoundWorks* is ideal for use as a multimedia speaker system with your PC or Mac.



SoundWorks works on 110 or 120-volts, so it's perfect for cars, RV's and boats. With our optional carrybag (\$49⁹⁹), it makes an ideal musical traveling companion. You can even play it in the carrybag.



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Complete system with satellite speakers and subwoofer with built-in amplifiers

"More than enough juice to fill an entire room with sound"

MacUser Magazine

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SoundWorks operates on either 120 or 12 volts, so you can also use it in boats, campers and cars. And with our optional carrybag, you can even travel with it.

How it works

SoundWorks consists of a powerful subwoofer and two compact satellite speakers finished in your choice of either charcoal gray, or in "computer-beige." Mini-stands are included, or you can attach the satellites to a computer monitor or TV with the supplied velcro kit.

The shoebox-sized subwoofer reproduces only non-directional bass, so it can be placed under your desk, or in back of furniture. It contains a powerful 3-channel amplifier that's been precisely tailored to match the speaker drivers. Its control panel includes a bass level control to adjust the subwoofer output for the size of your room.

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Audio Magazine

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CIRCLE NO. 6 ON READER SERVICE CARD

How Do You Improve On “..



Put It O

Announcing Our National Sale On Ensemble

Audio magazine once said that our *Ensemble* speaker system may be “the best value in the world.” Since then, dozens of critics and thousands of customers have applauded our *Ensemble*, *Ensemble II*, *Ensemble III* and *Ensemble IV* speaker systems. Designed by Audio Hall of Fame member Henry Kloss (founder of AR, KLH and Advent), these systems have become best sellers by offering very high quality construction and accurate, wide-range music reproduction and precise stereo imaging – all at factory-direct prices.

And now, for a limited time, we’re making the “best value in the world” even better. Save on all four models during the Great Ensemble Sale – now through March 31, 1996.

Save \$50 On Ensemble

Ensemble is our very best speaker system. It involves no compromises in performance, no



The Original Ensemble

cost-saving shortcuts. We (and the critics) believe it competes head-on with audiophile tower speaker selling for well over \$1,000 a pair. Yet its unique four-piece design literally disappears in your listening room. There is no other speaker like it.

Ensemble consists of four speaker units. Two slim subwoofers reproduce the deep bass, while two smaller satellite units reproduce the rest of the range. By separating the low bass from the rest of the musical range, *Ensemble* is able to reproduce just the right amount of energy across the musical spectrum, without



turning your listening room into a stereo showroom.

You can place the subwoofers on the floor, up against a wall, or in a corner – all places that allow them to reproduce bass notes efficiently. The satellite speakers can then be placed out in the room, at ear level, positioned to create a realistic stereo image. Their small size makes them very unobtrusive.

“...crisp balanced sound...stereo imaging is phenomenally sharp—some of the best I’ve heard...some of the speakers I’m comparing it to cost \$1,900 to \$2,800.”

High Performance Review
describing *Ensemble*

Ensemble’s dual subwoofers give you unbeatable placement flexibility – the ultimate key to real-life performance for any speaker in any given room. They also deliver uniform bass throughout the room, and give you outstanding power handling and sound pressure level capability. This is particularly important when reproducing the demanding bass effects on modern movie soundtracks.

The satellite speakers are genuine two-way systems with separate 4” mid-bass/mid-range drivers and 1 3/4” tweeters with integral domes. Their cabinets are solidly constructed of resonance-resistant MDF for optimum performance. Each one is hand-finished in scratch-resistant Nextel or durable white paint.

The subwoofers feature an 8” long-throw woofer designed by Henry Kloss and manufactured by Cambridge SoundWorks. They use a unique integrated heat sink for increased power handling capacity.

But most importantly, *Ensemble* has been painstakingly “voiced” by Henry Kloss for proper octave-to-octave tonal balance. Because

it does not give undue emphasis to any one octave of music, *Ensemble* has a rich, natural, accurate sound normally associated with the best (and most expensive) of conventional speakers under laboratory conditions. You can spend hundreds of dollars more for a speaker system that doesn’t sound as good. Available in black or white. With vinyl-clad subwoofers, Reg. \$599.99 – **Now \$549.99**. With black laminate subwoofers, Reg. \$649.99 – **Now \$599.99**.

Save \$40 On Ensemble II

Ensemble II is our best value in a high-performance speaker system. It uses the exact same satellite speakers as *Ensemble*, but with a more affordable, single-enclosure subwoofer. Because 90% of the music we hear is reproduced by the satellite speakers, these two systems have a very similar sound.



Ensemble II.

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

Stereo Review

Ensemble and Ensemble II are now also available in white.



The Best Value In The World"? n Sale!



Speakers - Now Through March 31, 1996.

The single subwoofer of *Ensemble II* has the same low bass extension as *Ensemble's* dual subwoofers. It simply doesn't have the room placement flexibility or power handling capacity of *Ensemble*. Compared to other three-piece speaker systems on the market, *Ensemble II's* subwoofer has more powerful deep bass - and its two-way satellite speakers easily outperform systems using dual "cube" satellites. Available in black or white. Reg. \$499.99 - Now \$459.99.

Save \$20 On Ensemble III

With *Ensemble III* you can bring clear, balanced, wide-range sound into a small, crowded room. It consists of two small satellite speakers and a compact subwoofer. But don't be fooled by *Ensemble III's* small size and modest price. Its natural, balanced, wide-range sound rivals that of much larger, far more expensive speakers.

Most speakers in its price range use single-driver "cube" satellites. But *Ensemble III* uses true two-way satellites for improved dispersion, tonal balance and power handling. The satellite cabinets are constructed of a stiff, acoustically damped inner body surrounded by a high-grade ABS shell, finished in scratch-resistant Nextel.

"Ensemble III sounded very good...first rate in every respect...it sounds like a lot more speaker than its unassuming appearance and very attractive price would suggest."

Stereo Review

Ensemble III's subwoofer is constructed of resonance-resistant MDF composite trimmed in black vinyl. It encloses a single 6 1/2" dual voice coil woofer in an air-tight, acoustic suspension cavity. While it doesn't have the same low-end "reach" as our *Ensemble* and *Ensemble II* systems, it does have very impressive deep bass response - far better than other systems in its price range. Reg. \$349.99 - Now \$329.99.



Ensemble III

<p>Save \$20 On Ensemble IV* Reg. \$249.99 - Sale Ends 3/31/96</p> <p>YOU MUST MENTION COUPON CODE WHEN ORDERING</p> <p>\$229⁹⁹ Code: GES102</p>		
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*Sale price may not be combined with any other special offers.

Save \$20 On Ensemble IV
Ensemble IV's is the most compact, most affordable subwoofer/satellite speaker system ever designed by Henry Kloss. Its compact size and affordable price make it the perfect system for many situations - as a main speaker system for an apartment or college dorm, or as a second system for your office, kitchen or bedroom. *Ensemble IV* is also a great way to add high quality sound to a TV set, without cluttering up a room.

Ensemble IV's compact satellites (4"x4"x4") house a unique, wide-range, long-throw 3" driver capable of reproducing notes down to 150 Hz. Its shoebox-size subwoofer contains a remarkable long-throw 5 3/4" bass driver with dual voice

coils. We don't know of any speaker near its price that sounds as good as *Ensemble IV*. Its best-selling competitor sells for almost twice its price. Reg. \$249.99 - Now \$229.99.



Ensemble IV

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CIRCLE NO. 6 ON READER SERVICE CARD

TIME DELAY



30 YEARS AGO

Sultans of Swat: In the March 1966 Letters, reader Charles Straub of Culver City, California, commented on recent Gene Lees pans of a variety of folk singers. Lees, he declared, "is too lenient toward these knotheads, and it is too bad that he can't follow up his reviews with a baseball bat."

In keeping with the cover proclamation "Special Tape Recorder Issue," features included Ken Gilmore's buying guide to battery-powered portable tape recorders (such as the Model 760 Charger reel-to-reel from V-M and the



V-M portable recorder, 1966

Carry-Corder 150 cassette recorder from Norelco), Robert M. Voss's look at car stereo players (including then-revolutionary eight-tracks), and Robert Angus's "Progress Report" on the first generation of home video recorders. Among new products this month were Benjamin's Miracord PW-40A turntable with factory-installed Elac STS 240 phono cartridge and M.I.M.'s series of loudspeaker systems built into framed canvas paintings. In test reports, Hirsch-Houck Laboratories examined the Fisher XP-7 speaker system (\$139.50) and the Mattes SSP-200 power amplifier (\$375), concluding that it "produced better sound from our speakers than we had thought them capable of giving."

And then she became a vegetarian: Reviewing "Where Does Love Go?," a pop album with French actor Charles Boyer giving "dramatic readings of lyrics," critic Morgan Ames said it was "as weird as a cow walking sideways."

20 YEARS AGO

Tales That Witness Madness: The March 1976 issue had a review of Kris Kristofferson's "Who's to Bless . . . and Who's to Blame" that saw Joel Vance dismissing the singer as "the John Denver of manic depression." Meanwhile, in Best of the Month, Richard Freed was ecstatic about a CRD recording of Schubert's Quintet in C Major by the Albeni Quartet with cellist Thomas Igloi, while Peter Reilly was transported by Van

Dyke Parks's "Clang of the Yankee Reaper."

Tape-themed articles included John Woram and Ralph Hodges's look at the new semi-pro multitrack recorders, a debate on the merits of chromium dioxide cassettes, and Joseph Kempler's in-depth exploration of "Optimizing Cassette Performance: The Problem of Azimuth." The same theme held sway in new products, with first looks at Marantz's Model 5420 cassette deck, Pioneer's RT-2022 open-reel recorder, and 3M's CTR-3 eight-track machine. Equal time for nontape products included a test report on the Luxman L-100 integrated amplifier, "a simply beautiful product."



I'm just talkin' 'bout Shaft: Reviewing B.B. King's "Lucille Talks Back" on the ABC label, Chris Albertson noted that the title track was "subtitled 'Copulation,' and that's rather apt, for, by charging \$7 for an album with a total running time of only 27 minutes, ABC is, so to speak, copulating the record buyer."

B.B. King, 1976



10 YEARS AGO

Along with the traditional tape-related features — among them a blank-tape buying guide and a survey of personal portables — the March 1986 issue included Alanna Nash's profile of singer/songwriter Joni Mitchell, who confessed that the original title for her "Dog Eat Dog" album had been "Songs of a Couch Potato." In Best of the Month, Robert Ackart "enthusiastically recommended" a Giuseppe Sinopoli-conducted version of Verdi's *Rigoletto* on Philips. Leading off new products was Sony's CDX-A10 DiscJockey, a ten-disc car CD changer designed to be mounted in the trunk. And in Technical Talk,



Sony DiscJockey car CD changer, 1986

Julian Hirsch discussed FMX, a system to reduce the noise level and increase the range of stereo FM transmissions, predicting it "may be the most important advance in FM broadcasting since the introduction of stereo."

Or maybe hair transplants? Critic Mark Peel, noting "it's too much to expect something new from Elton John," commented that most of "Ice on Fire" was "about as much fun as divorce court."

— Steve Simels

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Raekwon: Only Built 4 Cuban Linx (Loud Records) 00061 #

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Solo (Perspective/A&M) 03819

Dream Theater: Change Of Seasons (Walt Disney) 03937

Seven Mary Three: American Standard (Mammoth/Atlantic) 03989

Friends: Music From The TV Series (Rembrandt, Toad The Wet Sprocket, more) (Reprise) 03527

Sheryl Crow: Tuesday Night Music Club (A&M) 03061

Elton John: Greatest Hits (Polydor) 03077

Elton John: Greatest Hits: Volume Two (Polydor) 03078

Blackhawk: Strong Enough (Ansta Nashville) 03183

Martina McBride: Wild Angel (RCA) 03241

The Essential Judds (RCA) 03293

The Very Best Of Cream (Polydor) 03385

Anonymous 4: The Lily & The Lamb (Medieval English music, Harmonia Mundi) 03514

The Police: Every Breath You Take, The Classics (A&M) 03515

Sammy Kershaw: The Hits/Chapter 1 (Mercury Nashville) 03522

Morrissey: Southpaw Grammar (Reprise) 03530

Little Texas: Greatest Hits (Warner Bros.) 03551

The Gold Experience (Warner Bros.) 03555 #

Edwin McCain: Honor Among Thieves (Atlantic/Lava) 03608

Diana Ross: Take Me Higher (Motown) 03610

Annie Lennox: Medusa (Arista) 03678

Down: Nola (EastWest) 03806 #

Randy Crawford: Naked And True (Bluemoon) 04663

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Anita Baker: Rhythm Of Love (Elektra) 05980

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Gerald & Eddie Levert: Father And Son (EastWest) 03939

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R.E.M.: Monster (Warner Brs.) 06164

Bon Jovi: Cross Road (Greatest Hits) (Mercury) 06183

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Tapestry Revisited: A Tribute To Carole King (Rod Stewart, Celine Dion, others) (Lava) 04227

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The Idiot's Guide To Classical Music (RCA Victor) 08787

Monica: Miasa Thang (Rowdy Records) 08792

Enya: The Celts (Reprise) 08872

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Dwight Yoakam: Gone (Reprise) 05096

Björk: Post (Elektra) 08919

Bon Jovi: These Days (Mercury) 08925

Dangerous Crew: Don't Try This At Home (Jive) 10871 #

Claude Bolling: Vintage Bolling (Milan) 10872

Jackson Browne: Running On Empty (Elektra) 11056

The Click: Game Related (Joy/Sick Wild It) 11262 #

Clay Walker: Hypnotize (The Moon) (Giant) 11300

Boyz II Men: Cooleyhighharmony (Motown) 11415

The Songs Of West Side Story (RCA Victor) 11472

Vladimir Horowitz: The Last Romantic (A best-selling release, DG) 15542

Aaron Neville: The Tattooed Heart (A&M) 16655

The Best Of Aretha Franklin (Atlantic) 20078

Megadeth: Hidden Treasures (Capitol) 20501

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ABBA: Gold-Greatest Hits (Polydor) 20679

AC/DC: Who Made Who-Greatest Hits (Atlantic) 20774

Eagles: Greatest Hits 1971-1975 (Asylum) 23481

James Taylor: Greatest Hits (Reprise) 23790

The Best Of The Beach Boys (Capitol) 23946

Fleetwood Mac: Rumours (Warner Bros.) 24025

Foreigner: The Very Best...And Beyond (Atlantic) 24722

Stone Temple Pilots: Purple (Atlantic) 24738

Melissa Etheridge: Yes I Am (Island) 35501

The Steve Miller Band: Greatest Hits 1974-1978 (Capitol) 33199



Waiting To Exhale/Sdtrk. (Arista) 04466



The Lion King/Sdtrk. (Walt Disney) 03533

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Batman Forever/Sdtrk. (U2, Seal, Brandy, others, Atlantic) 08915

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Saturday Night Fever/Sdtrk. (Polydor) 34687 ☆

SOUNDTRACK SMASHES

The Bodyguard/Sdtrk. (Arista) 54213

Coolio: Cracker, others. (Capitol) 00341

A Whole New World, Prince Ali, etc. (Walt Disney) 04411

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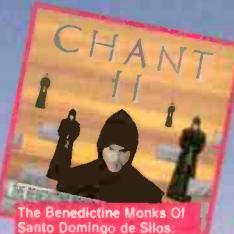
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NEW PRODUCTS



▲ KENWOOD

The KC-Z1 tuner/preamplifier kicks off Kenwood's Stage 3 home-theater line designed with "Human Touch Technology." A removable front-panel-mounted 900-MHz RF remote with a touch-screen display controls all functions as well as components from other manufacturers. The

KC-Z1 offers Dolby Pro Logic and AC-3 decoding and is THX certified. It has inputs for six video sources, five analog and four digital audio sources, and an AC-3 RF signal. Price: \$2,800. Kenwood, Dept. SR, P.O. Box 22745, Long Beach, CA 90801.

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▶ MAGNEPAN

The Magneplanar MMG planar/ribbon speaker has a two-way dipole radiator that is said to impart accurate imaging from an area equal to seventy-two 1-inch dome tweeters and nine 8-inch woofers. Frequency response is given as 50 Hz to 24 kHz ± 3 dB. Dimensions are 48 x 14½ x 1¼ inches. Available factory-direct only, it is the least expensive of Magnepan's offerings; a trade-up program gives buyers full or partial credit for up to a year after purchase. Price: \$500 (includes shipping). Magnepan, Dept. SR, 1645 9th St., White Bear Lake, MN 55110; phone, 612-426-1645.

• Circle 121 on reader service card



▲ SOUNDOLIER

Soundolier's SUB-40 SubCenter combines four 8-inch downward-firing passive subwoofers, a center speaker with two 6½-inch drivers and a 1-inch tweeter, and an attractive TV stand all in one cabinet. Measuring 23 inches tall and 40 inches wide (a 36-inch wide version is also available),

it supports direct-view TV's with screens up to 40 inches (diagonal) or tabletop projectors up to 45 inches. Price: \$1,340 finished in cherry veneer as shown, \$1,140 in black laminate. Atlas/Soundolier, Dept. SR, 1859 Intertech Dr., Fenton, MO 63026.

• Circle 122 on reader service card

▼ RCA

The top RCA Digital Satellite System (DSS) receiver, the DS7430RA, incorporates a dual-output dish antenna and StarSight technology for one-button VCR recording and channel tuning. Enhanced color graphics include a Family Room main menu to access program guides and

Personal Profiles with individual lists of favorite or locked-out channels for each family member. Price: \$949. RCA's DSS receiver line starts at \$599. Thomson Consumer Electronics, Dept. SR, 10330 N. Meridian St., Indianapolis, IN 46290-1024.

• Circle 123 on reader service card



NEW PRODUCTS

▼ YAMAHA

Built-in AC-3 decoding is the hallmark of Yamaha's DSP-A3090 digital soundfield processor/amplifier. Its redesigned DSP chips are said to provide 33 percent more processing power than prior models, with thirty different surround modes, including seven for enhanced Dolby Pro Logic and

five for AC-3. Seven channels of discrete amplification deliver 80 watts each to the three front and two surround speakers, plus 25 watts each for two front effects speakers. Price: \$2,499. Yamaha, Dept. SR, 6660 Orangethorpe Ave., Buena Park, CA 90620.

• Circle 124 on reader service card



DIAPASON ►

The Italian-made Diapason Micro speaker features a 4¼-inch woofer and a 1-inch dome tweeter in a cabinet measuring 11¼ inches tall, 7½ inches wide, and 11 inches deep. The drivers are said to be built expressly to Diapason's specifications, and the natural-finish wood cabinet is handcrafted from a solid piece of ash. Speaker cables connect to five-way, 24K-gold-plated binding posts. Bandwidth is given as 55 Hz to 20 kHz, sensitivity as 86 dB, and impedance as 8 ohms. Price: \$1,298 a pair. Diapason USA, Dept. SR, 218 Baldwin St., Philadelphia, PA 19127; phone, 215-487-3478.

• Circle 125 on reader service card



SHURE ►

A new line of Shure phono cartridges includes six models to fit the needs of anyone who plays LP's, from consumers to broadcasters and DJ's. The budget-minded M92E (\$24.95) features a biradial diamond tip, low tracking force (0.75 to 1.5 grams), and universal mounting

to fit either P-mount or half-inch standard tonearms. Shure cartridges may be purchased factory-direct if no local retailer carries them. Prices: \$24.95 to \$99.95. Shure Brothers, Dept. SR, 222 Hartrey Ave., Evanston, IL 60202; phone, 1-800-257-4873.

• Circle 126 on reader service card



◀ JAMO

Jamo's SW 400 E powered subwoofer measures a compact 15 x 9 x 19 inches (HWD). An 8-inch dual-magnet woofer fires downward from the bass-reflex cabinet for a rated low-frequency limit of 40 Hz. Amplifier power is given as 90 watts, and the built-in crossover can be set from 70 to 150 Hz. A remote-connection box simplifies hookup of main speakers. Finish is black ash. Price: \$499. Jamo Hi-Fi USA, Dept. SR, 425 Huehl Rd., Bldg. 8, Northbrook, IL 60062.

• Circle 127 on reader service card



▼ LEXICON

Lexicon offers three versions of its DC-1 Digital Surround processor/controller: the DC-1 Basic (\$1,995), with nine modes including Dolby Pro Logic; the DC-1/THX (\$2,995), which meets THX standards; and the DC-1/THX/AC-3 (shown, \$4,500, available this spring), which

adds AC-3 decoding, a digital "late night" compression circuit, and other features. All three models have eight channels of digital signal processing using 20-bit Delta-Sigma D/A converters. Lexicon, Dept. SR, 100 Beaver St., Waltham, MA 02154-8441.

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▼ CONCORD

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a 6 x 9-inch coaxial with a polypropylene woofer and a 1½-inch cone tweeter. Bandwidth is given as 45 Hz to 20 kHz. Price: \$99 a pair. Concord Car Audio, Dept. SR, 80 Crossways Park West, Woodbury, NY 11797.

• Circle 129 on reader service card



▼ FURMAN

Furman's PL-Plus power conditioner can protect sensitive equipment from dangerous spikes and surges while filtering out RF noise that can degrade performance. There is an LED meter to monitor voltage, and two slide-out, swiveling rack lights

illuminate components placed below them. The PL-Plus, rated to handle up to 15 amperes, has eight switched, grounded outlets on its rear panel. Price: \$229. Furman Sound, Dept. SR, 30 Rich St., Greenbrae, CA 94904.

• Circle 131 on reader service card



MAXELL ▶

Maxell's HC-402 audio cassette head cleaner uses three brushes to clean not only a deck's heads and tape track but also the area just outside the track, where most dirt collects. Fluid is applied with a drip-free applicator before inserting the cleaner like a normal cassette. Price: \$10. Maxell, Dept. SR, 22-08 Route 208, Fairlawn, NJ 07410.

• Circle 132 on reader service card



▲ VIRTUAL LISTENING SYSTEMS

Virtual Listening System's Auri processor combines Dolby Pro Logic decoding with proprietary digital signal processing to generate a five-channel surround effect with conventional stereo headphones. The Auri connects directly to a hi-fi VCR or other source and contains a wireless transmitter that talks to a

combination control module/headphone amplifier. It has three DSP modes — for Dolby Pro Logic, regular stereo, and mono sources — and a control to adjust your "listening position." Price: \$350. Virtual Listening Systems, Dept. SR, 4550 NW 6th St., Gainesville, FL 32609.

• Circle 130 on reader service card



▲ APOLLO

The British-made Aria modular equipment racks from Apollo can be customized to hold any combination of audio and A/V components. Units can stand alone or be linked together, and matching 72-disc CD drawers

and LP storage cubes are also available. Price: \$119 to \$199 for base packs; \$109 to \$199 for add-on packs. Apollo, distributed by QMI, Dept. SR, 25 South St., Hopkinton, MA 01748.

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SIGNALS

KEN C. POHLMANN

Is Stereo Dead?

Is stereo dead? What a question! Stereo is the predominant form of music playback. Everywhere you look, in home, car, and personal audio applications, you'll see stereo systems. In fact, the word "stereo," like "radio," has become generic in our vocabulary; you don't buy a new "audio playback system," you buy a "stereo." Stereo is everywhere, even in the titles of magazines. Is stereo dead? Are you kidding?

First, we should recognize that everything, including and especially technology, is transitory. For the first eighty years of audio history (from 1877 to 1958, to be exact), all audio was monaural. Perhaps because of its old age, mono's demise was sudden — it was quickly pushed aside by stereo. Today, stereo is not even middle-aged in people-years — it's only 38 — but whereas people increasingly live longer, technologies increasingly live shorter. Comparatively, stereo is about as old as mono was in 1958. Technologies grow old and pass into history. Stereo is growing old.

On the other hand, stereo is a survivor. Old-timers will remember that in the 1970's stereo appeared to be giving way to "quad." Quadraphonic playback seemed to follow a logical progression, from one channel to two, from two channels to four. New four-channel playback systems sprouted along with quadraphonic records, tapes, and even radio broadcasts. Audio showrooms everywhere resounded with the Berlioz Requiem, which calls for a huge orchestra and chorus augmented by four brass choirs and eight sets of timpani placed in the four corners of the concert hall — a great quad demo. But after a short-lived vogue, quad disappeared. It failed because there were several incompatible quad formats and because quad playback systems cost twice as much as stereo systems, but hardly doubled the enjoyment of music listening. The Berlioz Requiem was mourning quad, not stereo. Stereo survived the 1970's.

Today, people's home entertainment preferences are changing. Increasingly, sound is accompanied by picture. Whether it is a music video, a concert video, a feature film, or a video game, the video element is becoming more important, as witnessed by the popularity of large-

screen TV. And whereas more than two speakers may not be essential for satisfactory music playback, for many people two speakers just don't seem to cut it for video. It's not clear why. Perhaps it's because in pure music playback our imaginations successfully supply missing acoustic cues, but when a picture is added our imaginations atrophy, and the additional cues must be artificially supplied. Or perhaps it's just that you can't have too much of a good thing: If video and stereo heighten realism, then video and surround sound heighten realism even more. Or perhaps it's simply historical precedent. Theater sound used to be poor, and to compete with high-quality home stereo, Hollywood came up with surround playback. When theatrical films moved into the home, they took their audio enhancements with them. Whatever the rea-

son, home theater with multichannel surround sound is now driving the market.

Moreover, audio technology has evolved tremendously since 1958. A 5.1-channel system (with left, right, center, two surrounds, and subwoofer) can now be cost-effectively implemented, and most folks who've experienced it will agree that 5.1 is gangbusters for film viewing. With more and more audio/video systems providing facilities for both traditional stereo listening and home theater, and given the impetus toward home theater, there's a good chance that systems with two-channel stereo, as a format, will lose ground in the home.

Stereo will persist in modest playback systems, and in handheld systems. Headphone listeners will always appreciate two-channel stereo (although with modern signal processing, that experience could be improved by converting stereo sources for binaural playback). But one could argue that 5.1 audio will take the lead in future applications. The HDTV standard specifies 5.1, as does the new

DVD (digital videodisc) standard. The shift in the balance of power was evident during the development of DVD. From the beginning, 5.1 was mandated; the idea of a stereo-only soundtrack for digital video was never entertained. DVD will have options for stereo playback, but that is a footnote to this surround-sound medium. At this point, 5.1 seems poised to inherit the legacy of multichannel playback pioneered by stereo.

Not surprisingly, electronics manufacturers are helping to usher in the new age. They are eager to replace the huge installed hardware base of stereos with 5.1 systems. Moreover, record companies are anxious to upgrade their old catalogs with 5.1 versions, and they are well positioned to do that; virtually all labels have recorded multichannel masters for decades, so it should be possible to remix those masters for surround playback. After making billions in profits from two-channel stereo, it seems unfair to push it aside, but that is the economic reality. Surround sound has linked audio and video into one commercial entity.

So, is stereo dead? The answer ultimately depends on your definition of mortality. In one sense, technologies are immortal. As long as one collector cranks up a cylinder player or listens to a 78-rpm record, those formats will live on. But from a coldly technological standpoint, they're dead formats. A technology dies

Technologies grow old and pass into history.

Stereo is growing old, and 5.1 surround seems poised to inherit its legacy of multichannel playback.

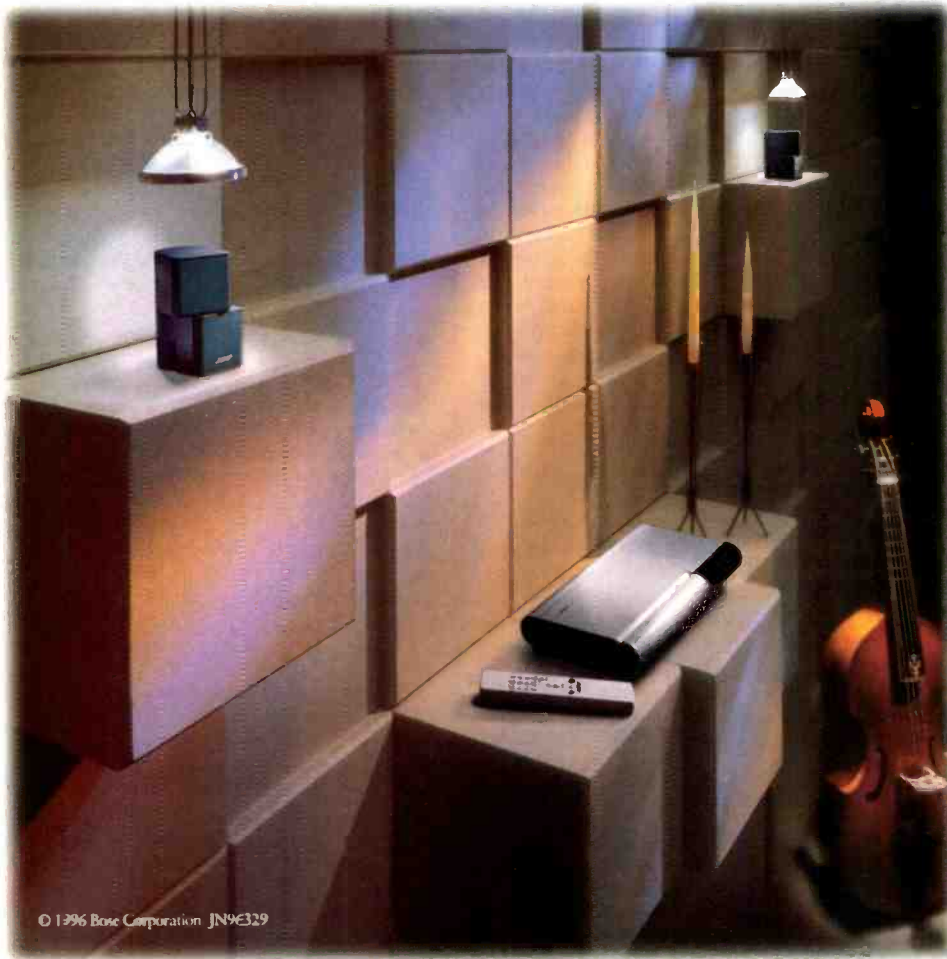
when it ceases to evolve — when it stops pushing the envelope and improving, when the best and brightest engineers turn their attention to a successor. In that sense, stereo began its death march on the day the compact disc was introduced. The CD was the greatest stereo medium ever invented, but with a catch: It proved how awesome stereo could be, but simultaneously pointed the way to the digital technologies that would replace it. The compact disc was stereo's greatest moment, its legacy, and the beginning of its end.

Now, audio engineers are plotting surround soundfields, store owners are stocking up on surround inventories, corporate bean counters are calculating earnings projections, and investors are buying up shares so that they, too, can participate in the surround boom. Before too much longer, we'll look back at stereo with affection and nostalgia, the way we now look back at black-and-white TV. And as black and white is to color, stereo will be to surround — antiquated and obsolete, a part of our primitive past. □



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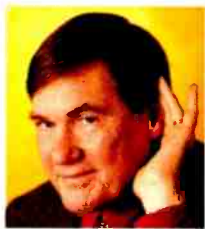
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AUDIO Q & A

IAN G. MASTERS

Magnetic Attractions

Q I've seen quite a few references to speakers that are "magnetically shielded" so as not to distort a TV picture or its color. What is shielding? And is there a certain distance my speakers should be from my television?

LEON E. GRIFFIN
West Franklin, NH

A In a conventional cathode-ray TV picture tube, an electron gun at the rear shoots a beam of electrons toward the screen, where it causes the tiny phosphors coating the inside of the screen to glow. The beam is deflected by electromagnets in the tube's neck so that it sweeps back and forth, "painting" a picture line by line. The positioning of the beam at any moment has to be very precisely controlled so that the picture won't be distorted and the appropriate dots of color will be illuminated. Any errors in that regard will cause color shift. Because the beam is magnetically controlled, it can be affected by stray magnetic fields from outside the set.

Most speaker drivers contain a large permanent magnet; the voice coil moves within the magnet's field in response to an audio signal. If a speaker is placed too close to a television set, its magnetic field can actually pull the electron beam out of alignment and cause either geometric or color distortion of the image. With the advent of home theater, however, there arose a necessity to develop speakers that could sit close to (or on top of) a TV set without causing such problems. For small speakers, sometimes a second magnet with reverse polarity is added to offset the effects of the active magnetic structure. Sometimes, special metal sheeting lines the speaker enclosure to keep the magnetic field inside.

As for how close you can place unshielded speakers to a TV, that depends on both their magnetic strength and the set's sensitivity to magnetic disruption. In most cases, about 3 or 4 feet should be enough, but the only way to tell is to put your speakers where you want them and look at the picture. If there's a problem, move the speakers away as soon as possible. The distortion is usually not permanent, although it may take some hours for the picture to return to normal. If it doesn't, the set will have to be treated with a degaussing coil.

Sizzling Sound

Q One quirk of my recently purchased system is that, unless I turn the treble control down to the 7 or 8 o'clock position, the high frequencies are too pronounced

and sound very harsh. I am using high-grade speaker cables and oxygen-free interconnects. Is it possible to achieve high-frequency overkill by using these cables?

RICK HUNTER
Raleigh, NC

A I doubt very much that your cables have anything to do with the shrill sound you're experiencing. High-quality wire may prevent the removal of parts of the spectrum — although even that is open to debate — but it certainly can't add the sort of coloration you describe. My guess is that the harsh highs are simply a characteristic of your speakers, and the only practical way to tame the top is to turn down the treble, as you've done. That's what tone controls are for. But if things sound overly dull when you roll back the treble, which is likely to be the case, you may be able to achieve an acceptable tonal balance using an equalizer. The other option is to check out another pair of speakers.

Compatibility Anxiety

Q I'm confused about what format to choose when I set up my home theater. I know that most of today's videos are encoded with Dolby Pro Logic. With a THX or Dolby AC-3 system, does the video have to be encoded with one of those formats to produce its full effect? What happens if a video encoded with one format is played on another type of system? And does anyone other than Lucasfilm use THX?

CHRIS NAVAZIO
Morton, PA

A The advent of new formats often brings with it a sort of "compatibility anxiety." In the case of surround-sound systems, things are not as bad as they may appear, but it can be confusing, so here are some facts about present and future surround systems:

- Movie videos are encoded in Dolby Surround, which is a method of mixing four channels to two in such a way that they can be separated later.

- Dolby Pro Logic is a playback decoding technique designed to extract separate left, right, and center channels and a bandwidth-limited surround channel (usually fed to two speakers) from the encoded Dolby Surround track.

- THX is a set of equipment standards established by Lucasfilm to insure that commercial and home theater systems reproduce soundtracks as closely as possible to what the movie producers intended. Home THX is not an encoding/decoding system like Dolby

Surround; rather, it is a set of performance requirements and specifications for implementing certain enhancements to a Dolby Pro Logic playback system. Lucasfilm certifies audio products that meet its standards but produces no equipment of its own.

- Dolby Surround Digital (AC-3) uses digital data compression to encode five discrete full-range channels plus a narrow-band subwoofer channel into a special digital signal. The AC-3 surround channels provide true stereo rather than mono fed to two speakers.

Dolby AC-3 is so far available only in laserdiscs, although the system has been selected as the U.S. audio standard for high-definition television and will be standard in the digital videodisc (DVD) system due out later this year. All AC-3 laserdiscs also contain a conventional Dolby Surround track and are playable through Pro Logic equipment. You'll need a laserdisc player with standard digital audio capabilities; older analog-only players can't access the conventional Dolby soundtrack because of where it's placed on the new AC-3 discs. All AC-3 decoders will also contain Pro Logic decoders, so you'll be able to play your existing discs and tapes even after you've stepped up to the new technology.

FM for Two

Q I am planning to install a rooftop antenna to improve my FM reception. I have two receivers I would like to hook up to the antenna, but I'm concerned about connecting the two antenna inputs in parallel. Also, since the older receiver only has clip connections, I'm committed to using flat two-wire cable. Will I lose enough signal strength over the 35- to 40-foot run to make the whole thing ineffective?

DAVID E. MARTIN
Kernersville, NC

A First, you are not restricted to the old-style flat 300-ohm twin lead, although it would probably work fine with a 35- to 40-foot run. There's a wider range of accessories designed to be used with 75-ohm coaxial cable, however, so I'd advise you to use that. For your older receiver, all you need is a 75-to-300-ohm transformer (or "balun") that you attach to the antenna terminals and screw the coaxial cable into. You'll also need a two-way splitter, which takes the signal from the antenna and routes it to both receivers.

You can probably pick up both the balun and splitter for a few dollars at Radio Shack or anywhere that sells cable-TV accessories. If there is a problem with signal level, which would probably show up as excessive noise, you may need a signal booster (also available at the accessories store), but I'd try it without one first.

Adding Subwoofer Power

Q My system includes a passive subwoofer, which I am driving with a 110-watt-per-channel receiver. I'm not having any problems with this setup, but the sub is

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rated at 150 watts, and I wonder if I could add a separate amplifier to drive it. If so, what sort of amplifier would I need, and how would I connect it to my receiver, which has no subwoofer output? BILL ADOLPH Greensburg, KS

A If you are content with what you now have, I wouldn't tinker with it. But if you do want to add extra amplification, it's a relatively simple matter, and it would give you independent control of your subwoofer's level. Almost any good amplifier would do, as long as it delivers enough power. That may mean only 50 watts or so — the sub's 150-watt power-handling rating refers to the maximum *continuous* power input it can accommodate without damage. The extra amplifier can be driven from the speaker outputs of your receiver. Simply connect the amp's input in parallel with either the left or right output. (Since bass is omnidirectional and typically recorded in mono, there should be no loss of program material.) Then connect the amp's output directly to the subwoofer; its internal crossover will filter out the upper frequencies. Keep in mind that you'll probably have to add a level control to "pad down" the receiver output to avoid overloading the new amp's input circuits.

Faraway Turntable

Q Because of a recent disability, I have had to rearrange my equipment to make it more convenient. I still have a small library of 78's and LP's I listen to, but the only place for the turntable is some 12 feet from the rest of the equipment. Is that distance likely to cause a low signal level and higher distortion? LI JIANG Laguna Hills, CA

A Probably. It's never a good idea to place a turntable any farther from the system's electronics than its supplied cable allows. The low-level signal that comes from a phono cartridge is susceptible to hum and other interference even at the best of times, and this susceptibility increases with the length of the cable run to the preamplifier. Also, the added capacitance of the longer cable may adversely affect cartridge frequency response.

If you have no other options for positioning the turntable, you might try using an outboard phono preamp, placed near the turntable, that will let you feed a much more robust signal to the rest of your equipment. You'd then have to use a line-level input on your receiver or preamp (CD, aux, or even one of the tape-monitor inputs) rather than the phono input. I did this once, and it worked very well. An inexpensive Radio Shack preamp did the trick, but there are more ambitious (and expensive) phono preamps on the market if you prefer.

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Windows 95 Revs Up the PC's Multimedia Engine

BY MARJORIE COSTELLO

Microsoft's multimedia blitz for Windows 95, featuring its music-video commercial themed with the Rolling Stones' *Start Me Up*, is now a fading memory. But as millions of PC owners upgrade to Windows 95, and millions more buy new PC's with Windows 95 preinstalled, the impact of this operating system on multimedia computing will keep growing. Thanks to Bill Gates's long-awaited and much-delayed opus, the PC's audio and video capabilities — easily surpassed until recently by those of the Apple Macintosh — are winning over the eyes and ears of legions of computer owners. Not only has Windows 95 made the PC easier to use, but its arrival has ushered in new software and formats making full use of its muscle.

Since Windows 95 was designed with audio and video in mind, it's loaded with performance and operational features that both simplify and enhance the multimedia computing experience. We'll "point" to a few highlights and "start you up" on some A/V features that even experienced Win95 users may have yet to explore.

First, Win95 is based on 32-bit architecture, which squeezes much better multimedia performance out of PC's than the 16-bit Windows and DOS did. New applications can capture and play bigger and bolder digital video and sound. In addition, Win95 is equipped with built-in Video for Windows, formerly an unfriendly add-on utility for Windows 3.1. The result is that Windows 95 delivers instant video capability, requiring no additional software to run video clips.

This combination of more powerful architecture and integrated digital video translates to improved performance for 16-bit Windows software. But software companies are introducing revamped Windows 95 versions of existing titles to take advantage of Win95's enhanced capabilities. A brand-new generation of dedicated 32-bit Win95 CD-ROM's has also appeared, including the first Sega games to be ported to the PC, *Tomcat Alley*,



The on-screen control panel for Win95's CD Player software, which lets you play music CD's in a CD-ROM drive.

Ecco the Dolphin, and *Comix Zone*. These and other titles are transforming the PC into a video-game platform that competes with state-of-the-art dedicated systems.

Besides games, a load of educational and reference CD-ROM's has hit the market, such as Microsoft's "Encarta '96 World Atlas" and "3D Movie Maker" and Mindscape's "How Your Body Works." Altogether, Microsoft has tested and certified 250 32-bit Windows 95 titles, with that number expected to at least double before year's end.

Another performance feature that will attract A/V enthusiasts is Windows 95's "pre-emptive multitasking" capabilities. This feature allows you to continue working at one task, such as viewing a video clip, while your computer is busy processing another task, say, downloading e-mail.

Windows 95 also adds built-in MIDI audio support to Windows' previously integrated waveform audio support. Most computer sound cards today support both the MIDI and waveform audio formats, and adding MIDI to Win95 amounts to a significant enhancement of the multimedia experience.

In the music world, MIDI (musical instrument digital interface) allows remote control of electronic instruments and is often used as a composition tool. In the computer world, however, the MIDI protocol is letting software developers add music to software efficiently, without chewing up much hard-disk space or processing power. By building MIDI support into Windows 95, Microsoft has encouraged software creators to include a wider variety of sounds so that consumers can enjoy richer music and more exciting special effects.

The added power under Win95's 32-bit hood could easily have been lost on most users. It hasn't, because the power is tapped to offer a host of new convenience and luxury features that make a PC easier and more enjoyable to use. Among these is support for Plug-and-Play, which automates the installation of sound cards, CD-ROM drives, and other peripherals. There's also a new AutoPlay feature, which instantly launches CD-ROM software just by inserting the disc — no need to remember the location of the program's setup icon or to navigate to the correct window. But A/V types will especially appreciate the inclusion of CD Player software, to play music CD's from a CD-ROM drive, and support for the new enhanced CD's.

Audio CD Player

After installing Windows 95, the first item on any audio lover's agenda should be to test out Win95's CD Player. Simply place any music CD in your computer's CD-ROM drive and

Win95 automatically starts it playing within seconds. Once you begin uncovering all the built-in controls, you'll wonder whether you're tweaking your PC or your audio system.

For example, as you listen you can open the CD Player's menu and start customizing playback. You can adjust volume levels and tone controls on a screen graphic resembling a real front panel. You can choose to display a track's elapsed or remaining time, or show the time left on the entire disc. You can even select random play or intro-scan, or multidisc play if you have multiple CD-ROM drives or a multidisc drive. Once you start playing audio CD's — and especially if you like to keep a reference disc like "Microsoft Bookshelf" loaded all the time — a multidisc CD-ROM drive becomes a very attractive option.

A particularly impressive CD Player feature lets you create and edit a list of selections on the disc. All you do is type in the name of the album, the artist, and each of the track titles. The information — including the song currently playing — is displayed in the window when the CD is running. If you want to skip to another song on the list, just click on the title in the play list. Win95 will automatically recognize that CD the next time you pop it into the drive and display your play list on command.

Enhanced CD

One of the more exciting developments in Windows 95 is support for a new CD-ROM/audio-CD format called enhanced CD (E-CD), also known under the trademarks CD Plus, AVCD, mTrax, and Rainbow CD, among others. Microsoft is actively promoting this hybrid format along with CD Plus developers Sony and Philips, the Recording Industry Association of America (RIAA), and most major record labels — translating into a strong vote of confidence for E-CD.

An E-CD can contain a variety of audio, video, graphic, and text elements. For instance, it could hold an album of music, a music video, cover artwork, song lyrics, liner notes, photos, discographies, interview clips, fan-club information, and credits. The first E-CD's from Sony under its CD Plus moniker even include the World Wide Web addresses for its music division and specific artists; future discs may allow a direct link to Web sites through the Microsoft Network. Because of the extra content, you can ex-

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pect to pay a little more for most E-CD titles, which currently range up to \$25 or more.

The premise behind E-CD's is simple. Ironically, while the relatively small physical size of an audio CD limits its exterior visual impact, for many titles the CD's internal storage capacity has remained an untapped piece of A/V real estate. Conventional pop CD's usually have only 50 to 60 minutes of music, leaving at least 14 minutes, or 250 megabytes (MB), of data capacity unused.

Therefore, E-CD's use different track configurations to embed up to 250 MB of nonaudio data along with the audio information. The computer data is usually invisible to standard CD players. That's an advance: Until E-CD's came around, CD-ROM's always put data on the first track, which produced static on an ordinary CD player that could damage speakers.

By the time you read this, there should be more than a hundred E-CD titles available, featuring new and old artists in every genre from rock to classical to jazz. The first wave shows promise. For example, the nonaudio portion of Sarah McLachlan's "The Freedom Sessions" on Arista includes, among other things, the artist's home videos as well as artwork from her personal collection, interviews, and a concert itinerary. The BMG Classics title "Classics On Line" has an introduction to classical music on its multimedia track. And the Rolling Stones' live album "Stripped" boasts interview snippets with Mick Jagger and other band members, a music video of the Stones doing their cover of Bob Dylan's *Like a Rolling Stone*, a discography, and lyrics for all fourteen songs.

Since E-CD support is integrated with Windows 95 (at least for CD Plus titles), the format benefits from other features we've mentioned. For example, AutoPlay lets you insert an E-CD into a computer's CD-ROM drive and have it play automatically. And Windows 95's 32-bit multimedia system delivers high levels of playback performance from enhanced CD's. Note that you can still play some E-CD's on PC's equipped with Windows 3.1, provided you have the right hardware and are willing to load some additional software drivers. But Win95 is by far the best and easiest way to tap into this provocative new format.

Gearing Up

If you're thinking about upgrading to Windows 95 or considering a new PC, Win95's minimum microprocessor requirement is an Intel or compatible 386DX or higher, though it performs best in computers equipped with a Pentium processor (standard in most new desktop PC's). Of course, to take advantage of the computer's multimedia capabilities, you'll also need a CD-ROM drive (quad-speed recommended), a good sound card, and speakers. Many computer marketers and audio manufacturers also offer speaker packages that include a subwoofer.

To run Windows 95, a minimum of 4 MB of memory (RAM) is required, and 8, 12, or even 16 MB is recommended to get the most out of some applications. Eight megabytes of RAM is also mandatory if you want to access the Microsoft Network online service. If you are upgrading your current computer, you'll need either Windows 3.0 (or higher) or MS-DOS 3.31 (or higher) already on your hard drive. A VGA-compatible video adapter is also essential, along with at least 40 MB of additional hard-disk space.

But let's not kid ourselves: In real-world use, once you install Win95 you'll be devouring disk space at a furious pace. As a personal example, my new Gateway 2000 Pentium with Windows 95 came with a massive 1-gigabyte hard drive (that's 1,000 MB). After just two months, I had only 450 MB of free storage available. Besides various application programs (word processors, spreadsheets, databases, online-service software, and so on), CD-ROM-related files, and text and some multimedia files downloaded from online services and the Web, I had also installed several important programs for maximizing and maintaining Windows 95. These included Windows 95's companion program, Microsoft Plus!, and a trio of utilities from Symantec — Norton Utilities, Norton Navigator, and Norton Anti-Virus.

Now that you're up to speed on some of Win95's multimedia capabilities, you're probably itching to upgrade your machine and start spinning some CD's — enhanced or otherwise. There's no better time than now to head for your local computer shop and say, "Start me up!" Just tell 'em Mick sent you. □

1927: Moviegoers are mesmerized by a new technology



D.W. Griffith, Carl Laemmle, Jr., and Sid Grauman with the Fox Movietone device, the first self-contained system for recording synchronous movie soundtracks.

Once again, ONKYO writes a new scene into the home theater script with our new TX-SV828 receiver. It's got all the classic ONKYO hallmarks—discrete amplifier design for incredible power and digital soundfield circuits—plus the latest surround sound innovations developed in conjunction with our global technology partners Motorola (the TX-SV828 uses the new 24-bit DSP microcomputer), Lucasfilm and Dolby. This team combination makes the TX-SV828 today's preeminent home theater receiver with the most advanced THX® processing and cinema acoustics accomplished to date.

Then we thought about tomorrow.

1996: Deja Vu



So we designed our new ED-901 AC-3 Processor. When you add the ED-901 to the TX-SV828 (or any compatible component), you create a home theater system that simply has no equal in terms of performance—not only for today, but well into the future. In typical ONKYO fashion, we've even improved on AC-3 by incorporating Lucasfilm Cinema Re-EQ processing into the ED-901. The result is a tonal balance for AC-3 movies that matches the standards Lucasfilm sets for its theaters, acknowledged as the world's finest acoustic venues for action pictures.

All of which makes for a viewing experience that's just as mesmerizing today as it first was 69 years ago.

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TECHNICAL TALK

JULIAN HIRSCH

My Take on the High End

Regular readers of this column are well aware that I tend to be somewhat unenthusiastic about many "high-end" audio products. Some may even believe that I am biased against that segment of the market.

As a matter of fact, though, nothing could be further from the truth. Many — actually most — high-end audio components embody the highest standards of construction and component quality. You have only to see and touch them (or, better yet, try to lift them!) to appreciate their solid construction. My forty-plus years of audio reviewing have given me a healthy respect for the abilities of many talented high-end designers.

On the other hand, I have never forgotten the reminder from a professor of mine that while almost any competent engineer might be able to design a product that costs \$1,000, say, and meets its desired performance goals, it takes an exceptionally talented engineer to achieve the same results in a \$100 product.

Some high-end designers seem to have lost sight of that idea. They use the most expensive components and assembly techniques, often amounting to massive overkill and resulting in the astronomical prices that seem the hallmark of high-end audio. Although this type of design may or may not produce better performance in any objective sense, it unquestionably increases the price of a component.

I have no quarrel with design practices that result in performance demonstrably superior to that of comparable "mass-market" products. Occasionally, however, the benefits of a "high-end" design are not that obvious, a difficulty that may be countered with the Emperor's new clothes technique. A skillful demonstration, using appropriate musical selections, can easily convince an uninformed listener that he hears the claimed sonic qualities.

In such a situation, you are unlikely to be offered a true double-blind comparison, one in which neither the person giving the demonstration nor the one hearing it knows which of two components is being heard at any given moment. Such a procedure, performed with a so-called ABX system, will almost invariably show that two properly functioning electronic components, if they are optimally adjust-

ed and have reasonable distortion and noise levels, cannot be reliably and consistently distinguished by ear. Unfortunately, a double-blind comparison is less effective with loudspeakers, because two speakers cannot occupy the same space, and it is relatively easy to localize each one as it is heard.

Nonetheless, I can see considerable justification for many good high-end components. If you don't mind spending the money (often several times the price of comparable or even better-performing mass-produced components), you can have the satisfaction of owning a music system that sets you apart from your fellow audiophiles and will probably awe your nonaudiophile friends, too, especially when you tell them how much it cost!

This column was inspired by a "high-end" audio magazine I picked up at the

**Occasionally the
benefits of "high-end"
audio components
are not that obvious.**

1996 Consumer Electronics Show in Las Vegas in January. The magazine, which shall remain unnamed, appears to be one of the more rational of its genre, and I could find little to fault in its editorial material and product reviews. But a one-page feature caught my eye that described a power amplifier bearing the name of a well-known manufacturer. Although the article was evidently based on a press release, its specifics were enough to make me check the calendar to verify that I had not overslept until April 1. Looking as though it weighs more than any two men could lift, this monster amplifier is priced at \$25,000! Using power tubes (!) for rectifiers as well as amplification, it produces a full 50 watts at an unspecified distortion level (it uses no negative feedback).

It appears that the well-known designer of this amplifier set out (with impressive success) to ignore every conventional design standard. But I have no doubt that the company will sell all that it can make,

and also that anyone who pays \$25,000 for this amplifier will be delighted with his purchase. Wouldn't you be?

Fortunately, not all high-end products are so far removed from the real world of audio. After all, home music reproduction is only an illusion of reality, though sometimes a very good illusion. There are many products, priced somewhat above the mass-market variety, that do deliver first-rate performance. I have tested quite a number of these over the years, and I would be happy to have any of them (and do have some) in my own system.

Let me point out that this does not contradict the views I have stated or implied above. In no case, except for loudspeakers, do these components have *any* significant sound quality of their own. As I have often said, the loudspeakers have more to do with the final sound than anything else except the program source, and they are effectively the sole source of the *sound* of a music system.

I am well aware that a sizable segment of the audio industry would take issue with that statement. If anyone could *prove* his ability to hear differences between two properly operating CD players, using music recordings and with precisely matched levels, I would be willing to modify my stand.

The whole subject strikes me as pure nitpicking in any case. It reminds me of the purists who never accepted the CD, claiming that its sound was in various ways inferior to that of an LP record. I grew up in the era of 78-rpm records, and the LP was certainly a giant leap forward. I also remember only too well my experiences in testing phono cartridges, with their typical intermodulation-distortion levels of *several percent* (a function of the geometry of the groove and the stylus, which is one reason why no one liked to discuss phono distortion). It's very rare to find a CD player with more than 0.1 percent distortion at any time, and more typical readings are less than 0.01 percent.

Those figures suggest to me that a properly functioning CD player/disc combination is unlikely to have any inherent audible nonlinear distortion that was not recorded on the disc. They also make it a bit difficult for me to accept the claims being made for the "improved" sound quality of players having 18- or 20-bit digital-to-analog conversion.

I guess my bottom line is a recommendation to trust your own ears when deciding on the importance of features of competitive products. If someone tells you that you should be hearing a certain sound quality and you don't hear it, you should be a little skeptical. After all, what *you* can hear is what matters, rather than what someone tells you *he* can hear. And if you come across a "high-end" component that you simply must have, and you can afford it, go for it! □



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“...this SRS processor is one of life’s experiences that must be heard to be believed.”

Richard Maddox, *Home Theater* April 95



Music to Your Ears

“...Talking about it seems to exaggerate its capabilities. Yet there is no denying that no matter how simple the SRS process is, it works remarkably well on any audio source, mono or stereo, and on any system from the cheapest boombox to a stereo TV set to high-end Dolby Pro Logic surround systems. And it does it without having to be pre-encoded on the audio material.” Richard Maddox, *Home Theater*, April 1995.

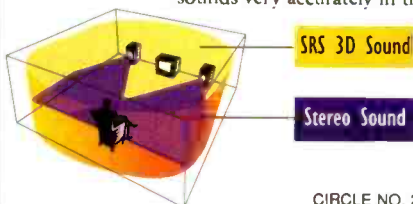
We’re flattered by Richard Maddox’s comments and every day we hear testimonials from users about how they are amazed by this technology. SRS (S) technology has won numerous accolades and has been granted several patents from various countries. Now through NuReality, the power of SRS 3D sound technology can be conveniently and inexpensively brought into your home with the Vivid 3D Theater.

How it Works

You only have two ears, yet you hear in three dimensions. Patented SRS technology is based on a natural psychoacoustic phenomenon, known as Head Related Transfer Functions or HRTFs, that have been largely ignored by modern sound reproduction technologies. HRTFs allow your brain to localize sound because the spectral characteristics, or frequency response, of the sound varies. These “spatial cues” supplied primarily by the outer ear, or pinna, are

transferred to the brain—enabling you to position sounds very accurately in three-

Stereo processing creates flat, two-dimensional sound, whereas SRS processing fills an entire room with lifelike, three-dimensional sound.



dimensional space. SRS technology essentially mimics these diffractive effects of the pinna by extracting information from a recording that originally came from the sides and rear. This ambient information gives you a sense of acoustic space. SRS then uses HRTF-based corrections to cause the ear to perceive these sounds in their original spatial relationships. The result is that the sense of realism you perceive from reproduced sound is dramatically enhanced.

Enhance your System

The Vivid 3D Theater easily connects to your existing system with standard audio cables, which are included. Within minutes you’ll be immersed in dynamic 3D surround sound. Like Richard said, SRS technology works remarkably well on any audio source, mono or stereo, as well as surround sound technologies such as THX® and Dolby Pro Logic®.

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The audio holy grail is to make the speakers sound invisible and to eliminate the sweet spot. We feel we’ve achieved this goal with SRS technology and the Vivid 3D Theater. Call today and discover what NuReality products can do for you. Experience SRS Technology for yourself with our free* Demo CD.



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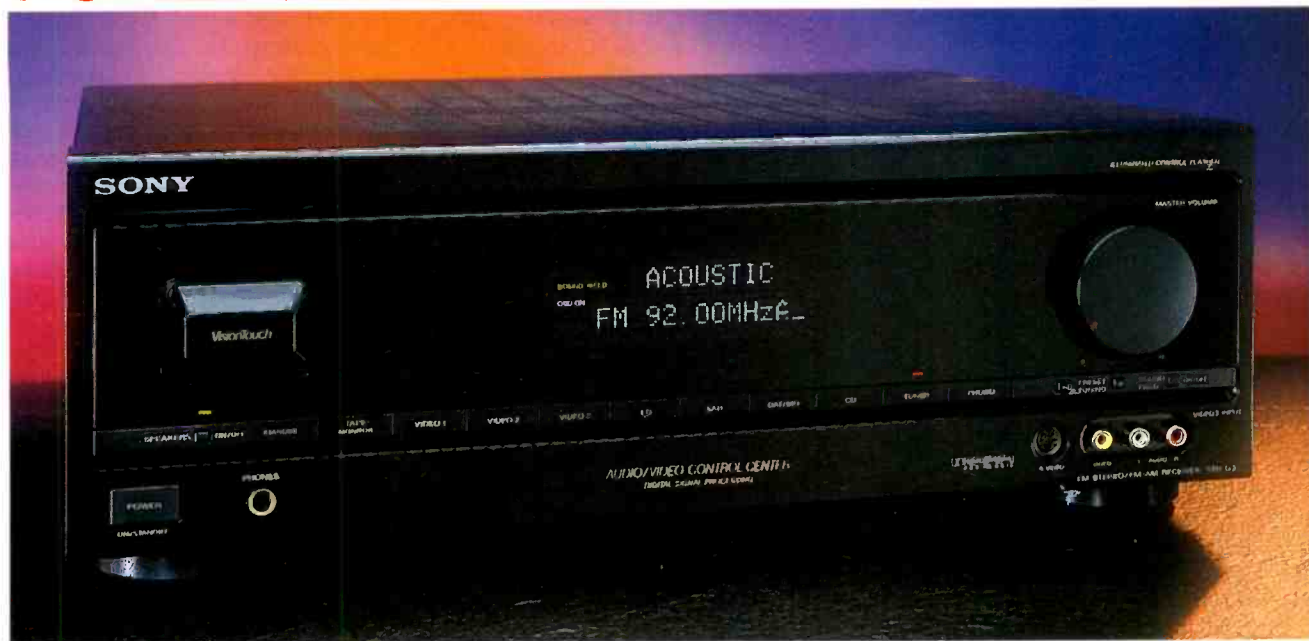
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*This specially recorded CD recreates the experience of 3D sound from any CD player and is available for a \$5.95 shipping and handling charge which is fully credited toward the purchase of a Vivid 3D system. This offer applies only to Vivid 3D products purchased directly from NuReality. Freight charges, duty or VAT are not included for international orders. All rights reserved. NuReality and the NuReality logo are registered trademarks of NuReality. SRS and the SRS logo are registered trademarks of SRS Labs. All product names are trademarks or registered trademarks of their respective holders. © 1995 NuReality 2907 Daimler St. Santa Ana, CA 92705 714-442-1080



JOCK P. LEUNG

Sony STR-G3 A/V Receiver

DAVID RANADA • TECHNICAL EDITOR

In the nearly two years since we first tested a component containing Sony's VisionTouch one-button remote-control system (the STR-G1ES A/V receiver in July 1994), other companies have introduced A/V receivers with screen-based menu-driven control schemes, but every other attempt I've seen has fallen short of VisionTouch in both versatility and usability. And, given the enhanced control capabilities offered by the STR-G3 A/V receiver, Sony's substantial lead in this area appears to have widened.

How does VisionTouch work? The reason there are so few buttons on the STR-G3's front panel is that most of its many functions are controlled by a series of on-screen displays or menus. The receiver's remote control is used to move a small, on-screen, arrow-shaped cursor over the display to the desired function "button." The function is activated by pressing the single "real" button on the remote. Users of personal computers will feel right at home with this point-and-click control method, as it is similar to the one employed by both the Macintosh computer and Microsoft Windows. But instead of a wired mouse, Sony provides its unique egg-shaped, one-button remote control, a "wireless mouse" that operates at radio frequencies and is

sensitive to the angle at which it is held. Changing that angle moves the on-screen cursor.

Menu-based operation greatly enhances the versatility of the STR-G3. For one thing, the receiver itself is capable of operating virtually any infrared-controlled device (the manual even mentions air conditioners!). Following a series of on-screen prompts, you can enter the brand of your external component and select the appropriate infrared-remote commands from a special menu. The bulge on the left side of the receiver's front panel is an infrared emitter that "sprays" the control commands into the room. In case the infrared signal doesn't reach the external component, Sony supplies a wired infrared-repeater module that plugs into the STR-G3's rear panel. You can place the adhesive-backed "emitter" end of the repeater's cable closer to the external component.

If the specific infrared commands

for your component aren't already contained in the STR-G3's memory, you can "teach" them to the receiver: You aim the component's remote at the receiver's front-panel bulge and click your way through a sequence of IR Code Setting menus. You can even assign your own names to the memorized commands.

Once external-component commands are programmed into the STR-G3, various automatic functions become available. Auto Start turns on the selected source component and starts playing it whenever you turn on the receiver. Auto Play starts playback as soon as a source component is selected. You can even create two eight-command control sequences (Macro Play). As a matter of course, turning the receiver on or off will also automatically turn on or off any components that have been programmed into the system. Various specialized menus are available for operation with specific Sony products, including a CD changer, a DSS satellite receiver, and a StarSight-equipped VCR.

VisionTouch is also used to control the receiver's own audio features. Among these are five surround-sound modes (Dolby Pro Logic, Theater, Hall, Stadium, and Game) and a tone-control processing mode (Acoustic), all of which are implemented via digital signal processing (DSP). You are given controls to adjust the effect level, speaker balance, and tone-control settings for each of the surround modes, which come preset with vari-

DIMENSIONS: 17 inches wide, 5 7/8 inches high, 14 3/8 inches deep

WEIGHT: 22 pounds, 1 ounce

PRICE: \$1,000

MANUFACTURER: Sony, Dept. SR, One Sony Drive, Park Ridge, NJ 07656

TEST REPORTS

ous bizarre values. All the surround modes except Pro Logic create multiple artificial reflections (from either a channel-sum or channel-difference signal), which are fed through the front and surround speakers.

The thirty-preset tuner is also menu-driven, but, puzzlingly, the menus don't let you tune in a station directly by keying in its frequency. Instead, you have to move slowly up or down the radio band to find the station you want, and then memorize it as a preset.

The STR-G3 is rated to deliver 110 watts per channel into 8 ohms in stereo mode and 100 watts each to three front speakers and 50 watts each to two surround speakers in surround mode. Speaker connections are all multiway binding posts (which, by the way, are *not* spaced to accept dual banana plugs). Other rear-panel facilities include audio-only connections for a

phono cartridge, a CD player, and two audio recorders, and A/V connections for a satellite decoder, a laserdisc player, and two VCR's. There's also an auxiliary A/V input on the front panel for temporary hookup of a camcorder or video-game console. All A/V connections include both S-video and composite-video jacks. On the rear panel are one S-video and two composite-video monitor outputs, jacks for the infrared repeater, the VisionTouch antenna, a special remote-control jack for a Sony CD changer, two AC convenience outlets, an F-connector FM antenna input, push connectors for the supplied AM loop antenna, and a simple mono subwoofer output labeled Mix Out.

In our lab tests, the STR-G3's basic amplifier and tuner performance was fine, though not exceptional, with only three significant performance anom-

alies. The first is that the STR-G3's frequency response through the left and right front speakers in all operating modes when the tone controls were set to "flat" was far from flat (see the red trace in the accompanying graph) — a phenomenon we have encountered to varying degrees with other A/V receivers. The deviation adds up to almost a 2-dB change across the audio range, which was audible primarily as a slight added warmth or heaviness, depending on the music. Fortunately, the receiver's response can be effectively flattened (to +0.11, -0 dB) merely by setting the treble control to +4 dB and the bass control to +0 for all DSP modes, including Acoustic, and by activating Acoustic even for plain stereo listening (see the green trace in the graph). We used these corrected settings for nearly all of our listening tests.

MEASUREMENTS

AMPLIFIER SECTION

All data for two-channel stereo operation.

OUTPUT AT CLIPPING (at 1 kHz)

8 ohms	116 watts
4 ohms	115 watts

CLIPPING HEADROOM

(re rated output, 8 ohms)	0.23 dB
---------------------------	---------

DYNAMIC POWER (8 ohms)	149 watts
-------------------------------	-----------

DYNAMIC HEADROOM

(re rated output, 8 ohms)	1.3 dB
---------------------------	--------

DISTORTION AT RATED POWER

(110 watts, 1 kHz)	0.066%
--------------------	--------

SENSITIVITY (for 1-watt output into 8 ohms)

CD	25.3 mV
phono	0.24 mV

NOISE (re 1 watt, A-wtd)

CD	-81.2 dB
phono	-71.6 dB

PHONO-INPUT OVERLOAD

(1-kHz equivalent levels)	
20 Hz	41 mV
1 kHz	31 mV
20 kHz	41 mV

RIAA PHONO-EQUALIZATION ERROR

20 Hz to 20 kHz	+0.19, -0.43 dB
-----------------	-----------------

FREQUENCY RESPONSE (tone controls "flat"; see text)

20 Hz to 20 kHz	+1.07, -0.75 dB
-----------------	-----------------

tone-control range (see text)

100 Hz	+7.1, -7.3 dB
10 kHz	+6.8, -7.4 dB
Bass Boost (maximum)	+12 dB at 65 Hz

DOLBY PRO LOGIC PERFORMANCE

FREQUENCY RESPONSE (tone controls "flat")

left, right	20 Hz to 20 kHz +1.03, -0.93 dB
center	20 Hz to 20 kHz +0.01, -0.9 dB
surround	20 Hz to 6.7 kHz +0.16, -3 dB

OUTPUT AT CLIPPING (1 kHz, 8 ohms, channels

driven individually, 114 volts AC line)	
front left, center, and right	76 watts
surround	35 watts

NOISE (re 1-watt output, A-wtd)

left, right	-73.8 dB
center	-73.9 dB
surround	-63.5 dB

DISTORTION (THD+N, 1 kHz, 1-watt output)

left, right	0.043%
center	0.039%
surround	0.48%

SURROUND-DECODER INPUT-OVERLOAD

MARGINS (at 1 kHz)	
left, right (re 2-volt input)	-1 dB
center (re 1.4-volt input)	+2 dB
surround (re 1.4-volt input)	-1.25 dB

SURROUND-CHANNEL NOISE-REDUCTION

CALIBRATION ERROR	
(re Dolby level, 247.5 mV)	-1 dB

CHANNEL SEPARATION (100 Hz to 7 kHz)

left output, right driven	>31 dB
left output, center driven	>33 dB
left output, surround driven	>27 dB
center output, left driven	>31 dB
center output, surround driven	>39 dB
surround output, left driven	>45 dB
surround output, center driven	>43 dB

TUNER SECTION

All data for FM only except frequency response.

SENSITIVITY (50-dB quieting)

mono	19 dBf
stereo	40 dBf

NOISE (at 65 dBf)

mono	-63 dB
stereo	-66 dB

DISTORTION (THD+N at 65 dBf)

mono	0.56%
stereo	0.35%

CAPTURE RATIO (at 65 dBf)

	1.3 dB
--	--------

AM REJECTION

	67 dB
--	-------

SELECTIVITY

alternate-channel	73 dB
adjacent-channel	11 dB

PILOT-CARRIER LEAKAGE

19-kHz	-82 dB
38-kHz	-65 dB

HUM (120 Hz)

	-76 dB
--	--------

CHANNEL SEPARATION

100 Hz	42 dB
1 kHz	46 dB
10 kHz	23 dB

FREQUENCY RESPONSE (measured at tape outputs)

FM	20 Hz to 15 kHz +1, -1 dB
AM	70 Hz to 2.7 kHz +0.5, -6 dB

SONY STR-G3 RECEIVER FREQUENCY RESPONSE



**Boston Acoustics
Home Theater Options**

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Tiny satellites and big theater sound.

Compact Reference Series

Incredible sound from compact speakers.

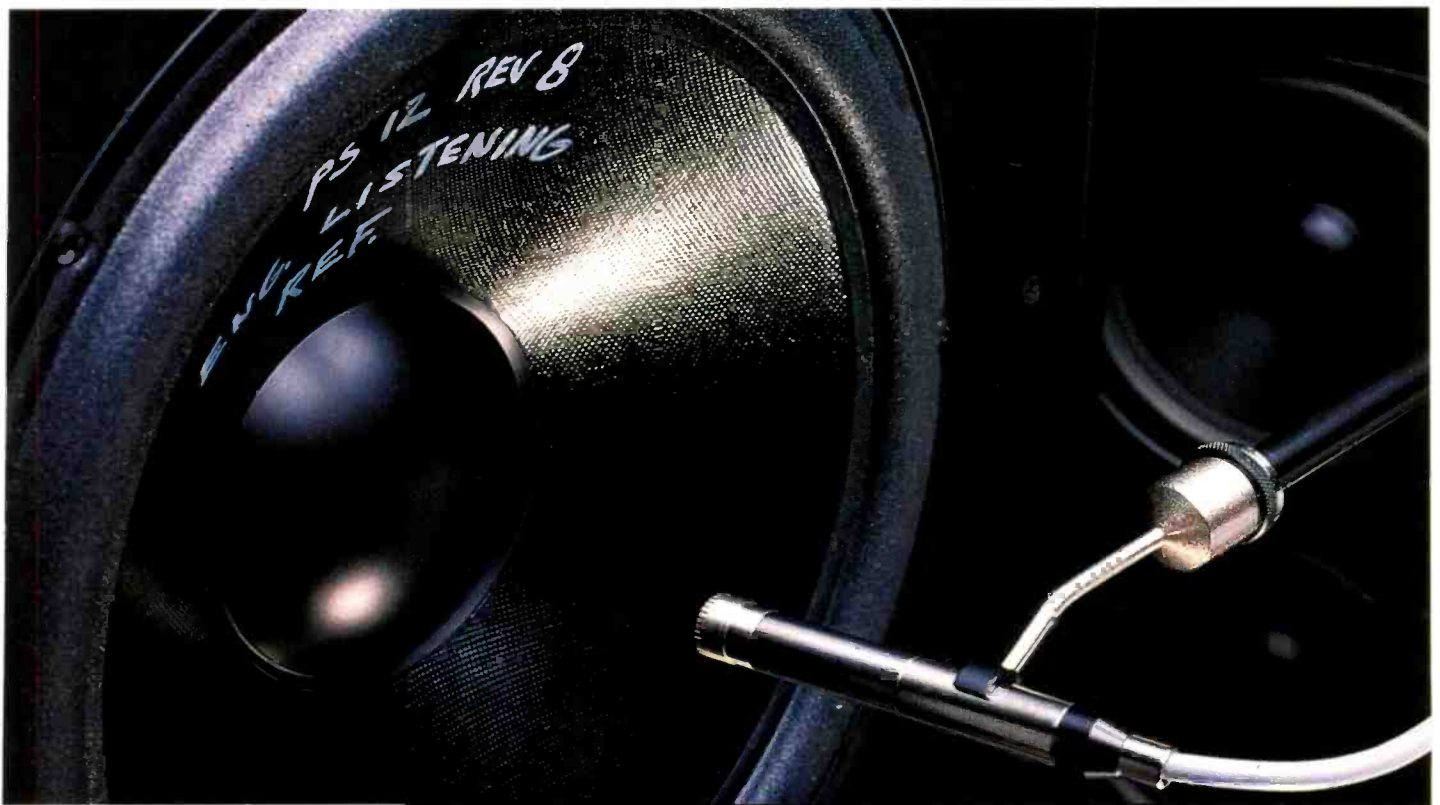
▶ **Lynnfield VR Series**

Audiophile sound with the full impact of AC-3.

Boston Acoustics THX® System

Dubbing studio quality sound.

AC-3 really gives speakers
a workout. Luckily,
we've had time to train.



**INTRODUCING THE NEW AC-3-READY HOME THEATER
SYSTEM FROM BOSTON ACOUSTICS.**

When we started working with the specs for AC-3, Dolby Labs' new digital home theater format, two things were apparent: One, AC-3 is nothing short of spectacular. And two, to realize the advantages of AC-3, speakers must work a lot harder than before.

First, AC-3's improved definition means if your front stage speakers aren't tonally matched, your ears will know it. That's why both our Lynnfield mains and center channel speakers use identical VR tweeters and matched midranges for uniform tonal balance and dispersion. So they easily reproduce the dialog clarity and stunning front soundstage effects that AC-3 promises.

Another AC-3 consideration: Since all speakers may be fed bass extending to 80Hz, centers and surrounds must play low. Good thing our VR10 and VR12 center channels and new Lynnfield VRS Pro surrounds were built to handle this very spec. Finally, a subwoofer must cleanly reproduce five discrete bass channels, plus AC-3's thunderous LFE (low frequency effects) channel – something our new VR2000 300-watt powered subwoofer can do without breaking a sweat. Get the whole scoop on our new AC-3-capable speaker system. Call 617 592-9000. Just remember to do some stretches before dialing.



This Lynnfield VR system includes our award-winning VR40 mains and VR12 center channel, plus our new VRS Pro surrounds and VR2000 300-watt powered subwoofer. (This system reproduces 21–20,000Hz \pm 3dB and an astounding 105dB at normal listening position.)

Boston Acoustics

70 Broadway, Lynnfield, MA 01940. Dolby and AC-3 are registered trademarks of Dolby Laboratories, Inc.

TEST REPORTS

In evaluating surround-channel performance, we were surprised to find that background noise was audible from the surround speakers during surround-sound operation (that is, in all DSP modes except Acoustic), even with the volume control turned all the way down. This showed up in the second anomalous measurement, for Pro Logic surround-channel noise, which at -63.5 dB was some 5 to 6 dB poorer than we would have liked to see and about 10 dB worse than we found with the earlier STR-G1ES receiver. Since much of this noise apparently originates after the receiver's volume control, its audibility will vary depending on the sensitivity and placement of your surround speakers. With our side-placed, typical-sensitivity dipole surround speakers it was sometimes audible in Pro Logic mode with surround-encoded music CD's.

Another surround-channel anomaly surfaced when we fed one of our standard test signals into the STR-G3. The reference surround-channel level-calibration tone (the last track of Disc 2 in the Delos "Surround Spectacular" set, DE 3179) produced faint crackling sounds out of the surround speakers in

all DSP modes except Acoustic, and from the front speakers as well in Game mode. The crackling seemed to occur whenever the program material contained sustained medium- or high-level out-of-phase signals. With typical program material, it was audible only occasionally.

The distortion and noise that appeared in the surround speakers probably account for the STR-G3's somewhat grungy sound quality in all surround modes. In Pro Logic operation its frontal imaging quality and motion tracking were fine, however.

Once we adjusted the non-Pro Logic DSP modes for best sound — which involved flattening the response using the tone controls as described above and turning the "effect" level for each mode down from the factory setting — we obtained a small but actually useful collection of ambience modes. As usual, they were most effective in adding a sense of space to acoustic music (classical, some jazz), less so with pop material. Although the Theater mode was moderately successful at enhancing the spaciousness of soundtrack material, I preferred plain Pro Logic. We're not sure what Sony

had in mind with the Game mode, but to us it sounded gritty and distorted on music, even when its response was flattened and its effect level was turned all the way down. Maybe video-game sound quality will be more positively affected.

Although the operation of the Sur(round) Effect control provided for the Theater, Hall, and Game modes implies that it has six distinct settings, there are actually only four: full-off, two intermediate settings (each receiving two steps in the display), and full-on. In the Stadium mode, the Surround Effect control produced no changes whatsoever. For the modes in which the control *is* operational, it changes only the level of the added reflections that appear in the front speakers; it does nothing to the surround signal. This is actually good, since you can totally remove the added reflections (by turning Surround Effect all the way down) from the front speakers, where they usually color the sound and disturb the stereo image.

While the STR-G3's overall sonic performance was fine in stereo-only operation, we've heard cleaner Pro Logic decoding from less expensive

A lot of companies put Home Theater in a Box.



Most brands of "Home Theater in a Box" are little more than a bunch of components thrown together in a shipping carton. For Celestion, Home Theater in a Box **HTiB** means integrating everything you need for Home Theater into a sub-woofer/control module that contains six built-in amplifiers and a Dolby Pro Logic® decoder. Celestion's HTiB also comes with four speakers (two front and two rear); a center channel dialog speaker; all the necessary

A/V receivers utilizing analog Pro Logic processing.

On the other hand, the radio-frequency one-button remote is unique and, once you get a feel for it, easy and fun to use — it's all in the wrist! Sony has also improved the Vision-Touch system since we reviewed the STR-G1ES. There is now a volume control in the top-level menu as well as in several subsidiary menus. To change volume or activate speaker muting from a menu-off state now requires only two pushes of the remote's button. And, perhaps most important, you don't need a TV monitor to operate the receiver or the other components whose remote commands are programmed into it. A series of indicator lights in the front-panel display provides just enough visual feedback to allow basic external-component operation as well as control of the receiver's volume, muting, input selection, and system power. This feature cannot operate with A/V sources, just with audio inputs.

One of the claims to fame of the VisionTouch system is multicomponent operation with a single remote control. We had no difficulty getting the re-



Sony's one-button remote control is a "wireless mouse" that operates at radio frequencies.

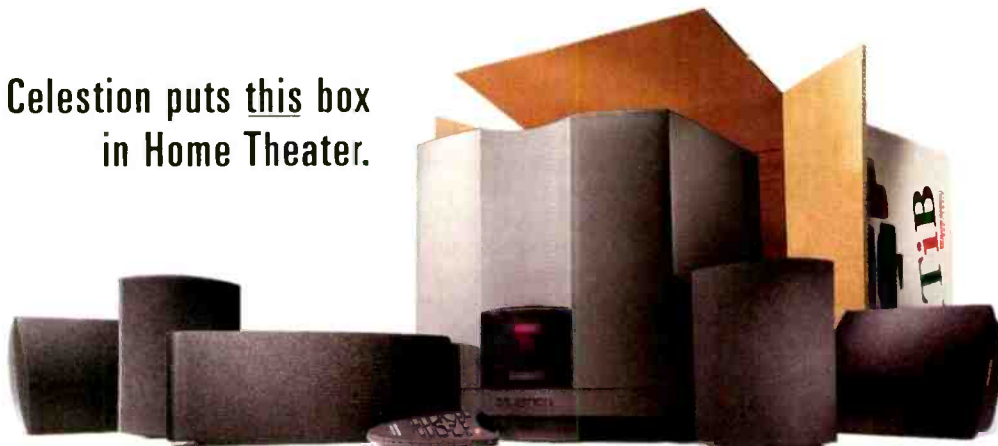
ceiver to control a Pioneer laserdisc player whose control codes were stored in the STR-G3's memory. (Forward and reverse scan did not operate correctly, however.) We also used the rear-panel Ctrl-A jack to connect the

STR-G3 to a Sony CDP-CX151 100-disc CD changer to test the more advanced multicomponent operations of the receiver, such as disc labeling, categorization, and cueing. This particular component combination is a winner, especially for those who are willing to enter disc titles into the receiver. Once that data is entered — a very simple but time-consuming and wrist-intensive process — cueing up discs by title is a snap.

The three advanced VisionTouch control functions (Auto Play, Auto Start, and Macro Play) did operate as described in the manual. It's hard to imagine, however, that anyone will have the patience for their setup procedures or will even need these capabilities. In particular, since there is no clock or timer in the receiver, you can't use the Macro Play feature to turn on, say, a tape deck at a specified time.

Convenience is the core of the STR-G3 and the *raison d'être* of VisionTouch, its most important feature. The STR-G3 is probably the ultimate receiver for information-age couch potatoes. And if you can't figure out the computer-like ins and outs of VisionTouch, ask your kids for help. □

Only Celestion puts this box in Home Theater.



accessories and a remote control for adjustments from your "theater" seat. (Set-up for the entire system just takes minutes.) Most importantly, this is the only Home Theater System that comes with the expertise Celestion has gained through 70 years of professional sound reinforcement experience. HTiB is what your TV has been waiting for.

Celestion Industries, Inc. 89 Doug Brown Way, Holliston, MA 01746 (508) 429-6706 Fax (508) 429-2426 Dolby Pro Logic is a registered trademark of Dolby Laboratories Licensing Corporation.

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TEST REPORTS



JOCK P. LEUNG

Canon S-25 Speaker

JULIAN HIRSCH • HIRSCH-HOUCK LABORATORIES

In November 1994, we reviewed a new and unusual speaker, the Canon S-35. Strikingly different in appearance from other speakers — we likened it to a stylized bust of Darth Vader — the S-35 was the first in a series of unconventional loudspeakers featuring what Canon calls “Wide Imaging Stereo,” or WIS. As used in the S-35, WIS involved projecting the output of two concentrically mounted drivers downward against a conical reflector to disperse the speaker’s entire output forward and outward in a controlled arc.

The Canon speaker line has expanded considerably since then, and it currently comprises at least seven models (including the original S-35). Several of the new Canon speakers are identified as having “Wide Dispersion Sound” (WDS) and are recommended for use as either satellite or surround speakers in home theater systems.

The S-25 is one of the WDS models. Like most other Canon speakers, it bears little external resemblance to conventional box speakers. The all-black structural-plastic enclosure, shaped like a truncated artillery shell, contains a 5¼-inch bass/midrange driver that radiates frontward through a black cloth-covered perforated grille. The enclosure is vented through two

small openings in the rear. The input terminals, recessed into the back of the cabinet, accept single or dual banana plugs or stripped wire ends.

High frequencies are generated by a downward-facing dome tweeter whose output exits through the flared mouth of the enclosure, spanning almost 180 degrees in the horizontal plane. The rated sound dispersion is from zero to 25 degrees vertically (upward) and 90 degrees horizontally.

According to the manufacturer, the S-25 can handle up to 100 watts input, and it is recommended for use with amplifiers rated to deliver between 10 and 100 watts. Rated sensitivity is 89 dB sound-pressure level (SPL) at 1 meter with an input of 2.83 volts.

Since the Canon S-25 is designed for use in both home theater and music systems, its external magnetic field has been kept to a minimum, rated less

DIMENSIONS: 8½ inches wide, 9 inches deep (at the base), 13 inches high

FINISH: black

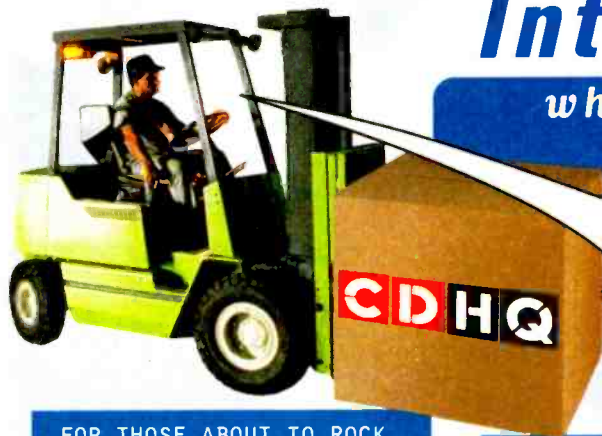
WEIGHT: 6½ pounds

PRICE: \$299 a pair

MANUFACTURER: Canon, Dept. SR, One Canon Plaza, Lake Success, NY 11042

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Dream Theater <i>A Change Of Seasons</i> (eastwest)	13•5855
Melissa Etheridge <i>Yes I Am</i> (Island)	46•6763
Megadeth <i>Youthanasia</i> (Capitol)	10•8340
John Mellencamp <i>Dance Naked</i> (Mercury)	48•5755
Monster Magnet <i>Dopes To Infinity</i> (A&M)	12•2200
Mötley Crüe <i>Decade Of Decadence '81-'91</i> (Elektra)	42•9316
Vince Neil <i>Carved In Stone</i> (Warner Bros.)	13•4619
Jimmy Page & Robert Plant <i>No Quarter</i> (Atlantic)	10•8977
Tom Petty <i>Wildflowers</i> (Warner Bros.)	11•0155
R.E.M. <i>Monster</i> (Warner Bros.)	10•3929
U2 <i>Achtung Baby</i> (Island)	43•1213
Neil Young <i>Mirror Ball</i> (Reprise)	13•1359
ZZ Top <i>Greatest Hits</i> (Warner Bros.)	43•8010

BREAKOUT ARTISTS

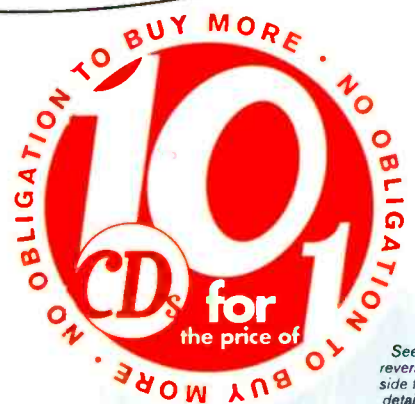
Better Than Ezra <i>Deluxe</i> (Swell/Elektra)	12•2960
Blessid Union Of Souls <i>Home</i> (EMI)	12•2549
Bush <i>Sixteen Stone</i> (Trauma Records)	11•8885
The Corrs <i>Forgiven, Not Forgotten</i> (143 Records/Lava/All)	14•0863
D'Angelo <i>Brown Sugar</i> (EMI)	13•1714
Faith Evans <i>(Bad Boy/Arista)</i>	13•4676
Goo Goo Dolls <i>A Boy Named Goo</i> (Warner Bros.)	12•1178
Edwin McCain <i>Honor Among Thieves</i> (Lava/Atlantic)	13•5285
Joan Osborne <i>Ralish</i> (Mercury)	12•6110
Rusted Root <i>When I Woke</i> (Mercury)	10•3606
Take That <i>Nobody Else</i> (Arista)	13•5806

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URBAN GROOVES

Boyz II Men <i>II</i> (Motown)	10•2681
Toni Braxton <i>(A Face)</i>	46•4362
Coolio <i>It Takes A Thief</i> (Tommy Boy) ▲	12•9627
DAS EFX <i>Hold It Down</i> (eastwest) ▲	13•5848
Warren G <i>Regulate...G Funk Era</i> (Violator/RAL) ▲	48•2208
Guru <i>Jazzmatazz, Vol. II: The New Reality</i> (Chrysalis)	13•3892
M.C. Hammer <i>M.C. Hammer V Inside Out</i> (Giant)	13•4916
Janet Jackson <i>Rhythm Nation 1814</i> (A&M)	38•8918
Montell Jordan <i>This Is How We Do It</i> (PMP/RAL/Island)	12•3091
Eddie And Gerald Levert <i>Father And Son</i> (eastwest)	13•6309
Madonna <i>Bedtime Stories</i> (Maverick/Sire/Warner)	11•0429
Method Man <i>Teal</i> (RAL/Def Jam) ▲	11•4082
"Murder Was The Case" (Death Row/Interscope) ▲	11•2714
Prince <i>The Hits 2</i> (Paisley Park)	46•6631
Rappin' 4-Tay <i>Don't Fight The Feelin'</i> (Rag Top/Chrysalis) ▲	11•1153
Real McCoy <i>Another Night</i> (Arista)	11•3662
Salt-N-Pepa <i>Very Necessary</i> (Next Plateau/London)	46•7837
"The Show" (Def Jam) ▲	13•4791
Various MTV <i>Party To Go, Vol. 4</i> (Tommy Boy)	47•8628
The Village People <i>The Best Of...</i> (Casablanca)	47•8131
Barry White <i>The Icon Is Love</i> (A&M)	11•1286



See reverse side for details

MORE ALTERNATIVES

"Angus" <i>Orig. Sndtrk.</i> (Reprise)	13•4882
"Batman Forever" <i>Orig. Sndtrk.</i> (Atlantic)	13•0765
Candlebox <i>(Maverick/Sire/Warner)</i>	48•5185
"Clueless" <i>Orig. Sndtrk.</i> (Capitol)	13•3900
Elvis Costello & The Attractions <i>The Very Best Of...</i> (Rykodisc)	11•8968
Del Amitri <i>Twisted</i> (A&M)	12•0733
"Empire Records" (A&M)	13•4932
Filter <i>Short Bus</i> (Reprise)	12•5997
"Friends" (Music From The TV Series) (Reprise/Sire)	13•9279
Green Day <i>Dookie</i> (Reprise)	47•6549
Chris Isaak <i>Forever Blue</i> (Reprise)	13•0203
Meat Puppets <i>No Joke</i> (London)	13•9493
Morrissey <i>Southpaw Grammar</i> (Reprise)	13•9337
NIN <i>The Downward Spiral</i> (TVT/Interscope) ▲	47•6739
Liz Phair <i>Whip-Smart</i> (Motown/Atlantic)	10•2657
Primus <i>Tales From The Punchbowl</i> (Interscope) ▲	12•7852
The Rembrandts <i>IP</i> (eastwest)	12•2408
311 (Capricorn)	13•5335

PROZAC ANYONE?

THE CDHQ ZOO

Beastie Boys <i>Root Down</i> (Capitol) ▲	12•9486
The Black Crowes <i>America</i> (American)	11•1369
Blackhawk <i>Strong Enough</i> (Arista)	13•7059
Sheryl Crow <i>Tuesday Night Music Club</i> (A&M)	47•6531
Eagles <i>Greatest Hits, Vol. 2</i> (Asylum)	31•7768
Jeff Foxworthy <i>Games Rectnecks Play</i> (Warner Bros.)	13•3322
The Mankees <i>Greatest Hits</i> (Arista)	40•8203
Pantera <i>Far Beyond Driven</i> (eastwest) ▲	46•8926
Phish <i>Live</i> (Elektra)	13•1607/39•1607
Scorpions <i>Live Bites</i> (1988-95) (Mercury)	12•6912
Seal (1994) (Sire/Warner Bros.)	48•4741
Seals & Crofts' <i>Greatest Hits</i> (Warner Bros.)	29•1849
Snoop Doggy Dogg <i>Doggystyle</i> (Interscope/Death Row) ▲	46•5955
Temple Of The Dog (A&M)	44•2780
Toadies <i>Rubberneck</i> (Interscope)	10•2491
Yellowjackets <i>Dreamland</i> (Warner Bros.)	13•4957

THE OTHER FAB FOUR.

what's new pussycat?



Deep Blue Something
Home (Interscope)
13•7273



Ace of Base
The Bridge (Arista)
13•9113



AC/DC
Ballbreaker (eastwest)
▲ 13•5830



"Waiting To Exhale"
Original Soundtrack (Arista)
14•0962



Pretenders
Isle Of View (Warner Bros.)
13•9592



The Gold Experience
(Warner Bros.) ▲ 13•6846



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than 3 gauss at 1.2 inches from the enclosure. A quick scan using a gaussmeter confirmed this rating. There is also an automatic-resetting thermal sensor to protect the system against damage from overdriving.

For our tests, we placed the two S-25 speakers on stands about 9 feet apart and 18 inches in front of a wall. Room response was derived by measuring the output of each speaker (one at a time) from a point on the axis of the left speaker and 12 feet away from it. The two response curves were then averaged and corrected above 10 kHz for the room's known absorptive characteristic.

The composite response was excellent, within ± 2.5 dB from 100 Hz to 20 kHz. The close-miked woofer response was within ± 3 dB from 40 Hz to 2 kHz. Sensitivity was as rated, 89 dB SPL measured at a distance of 1 meter with a 2.83-volt random-noise input. The woofer distortion, at a 3.2-volt drive level (equivalent to a 90-dB reference level), was low at most upper bass and middle frequencies, measuring between 0.6 percent and 1 percent from 180 Hz to 2 kHz and rising at lower frequencies to 3 percent at 100 Hz and 10 percent at 60 Hz.

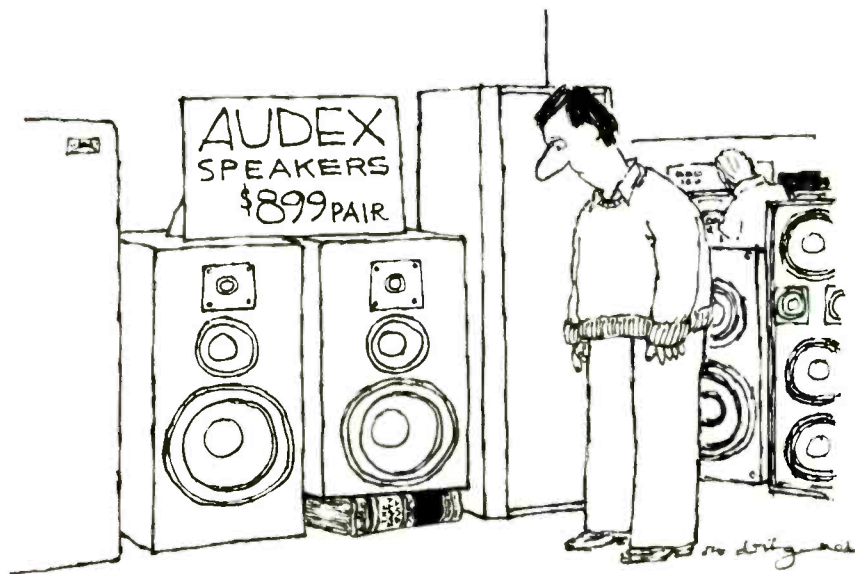
The S-25's anechoic frequency response, measured with our Audio Precision system's MLS program, was essentially identical at distances of 1 meter and 2 meters from the speaker. The output varied about ± 2 dB from 300 Hz (the lower measurement limit) to 4 kHz, which was near the crossover frequency. The output variation was greater at higher frequencies, with a total variation of ± 7 dB from 6 to 20

kHz. The tweeter resonance appeared to be at 16 kHz.

The horizontal dispersion over a wide range of frequencies was exceptional thanks to the design and orientation of the $\frac{3}{4}$ -inch horn-loaded tweeter. Although the horizontal dispersion is rated as ± 45 degrees, in our measurements it appeared to be closer to ± 90 degrees, which is *much* better than any conventional forward-firing speaker we have tested. System impedance is rated at 6 ohms, though the specifications state that the effective impedance with "simulated" programs is 8 ohms. We measured a minimum impedance of just under 5 ohms in the 200- to 300-Hz range, with peaks to 25 ohms at 19 Hz, 15 ohms at 100 Hz, and about 12 ohms at 1 kHz and 4 kHz (the last reading apparently resulted from the tweeter crossover, at a nominal 4.5 kHz).

We placed the Canon S-25 speakers on both shelves and stands for our listening sessions. For greater installation flexibility, Canon offers specially designed brackets for wall mounting (ideal for surround-channel applications) that screw into threaded inserts on the rear of the speaker cabinets.

The Canon S-25's sounded pretty much the way the composite response curve would suggest — very clean, smooth, and uncolored. Add in their small size and exceptional dispersion, and you have a pair of speakers that you can put just about anywhere without sacrificing performance. They effectively "disappeared" when playing, which is one of the things that I look for in listening — and appreciate when I find it! □



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JOCK P. LEUNG

Bose Lifestyle 20 Music System

JULIAN HIRSCH • HIRSCH-HOUCK LABORATORIES

Although Bose is primarily known to audio enthusiasts as a major manufacturer of loudspeakers, the company is probably better known to the general public for its innovative Wave radio and Acoustic Wave music system.

For about a decade, Bose has manufactured three-piece Acoustimass powered speaker systems, typically consisting of two pairs of small cube-shaped satellite speakers and a separate woofer (bass module), with the amplifiers built into it, that can be placed in an inconspicuous location. In 1990 the company extended the concept by combining Acoustimass speakers with a sleek, compact CD/tuner/control "Music Center" and an RF remote control and has marketed these complete systems under the name "Lifestyle."

The newest and most advanced ex-

ample of this all-in-one system format is the Lifestyle 20, which represents a quantum leap in both performance and convenience over its predecessors.

DIMENSIONS

Bass Module: 23¼ inches wide, 14 inches high, 7½ inches deep
 Satellites: 2¼ inches wide, 3¼ inches deep, 4¾ inches high
 Music Center: 15½ inches wide, 8 inches deep, 2½ inches high

WEIGHT

Bass Module: 33 pounds
 Satellites: 1 pound each
 Music Center: 6 pounds

FINISH

Bass Module: black
 Satellites: black or white
 Music Center: brushed aluminum

PRICE: \$2,500

MANUFACTURER: Bose, Dept. SR, The Mountain, Framingham, MA 01701

Probably the most obvious difference between it and any other music system lies in the extraordinarily small size of its satellite speakers.

Typically, the "cube" speakers from Bose and a number of other manufacturers have consisted of two cubes per channel, about 4 inches on a side, which can be rotated relative to each other to obtain the desired dispersion. The Bose Lifestyle 20 follows that pattern, but with the major difference that each "cube" (they are not true geometric cubes) is only 2½ inches square and 3¼ inches deep! And each dual-cube satellite speaker weighs a mere 1 pound.

These diminutive speakers, which Bose aptly calls Jewel Cubes, are actually miniature vented systems operating from the bass module's crossover frequency of about 200 Hz out to the upper limits of audibility. Holding a Jewel Cube up to your ear provides convincing evidence that its lower-frequency output is propagated via the port, while the highs emerge from the front of the cubes.

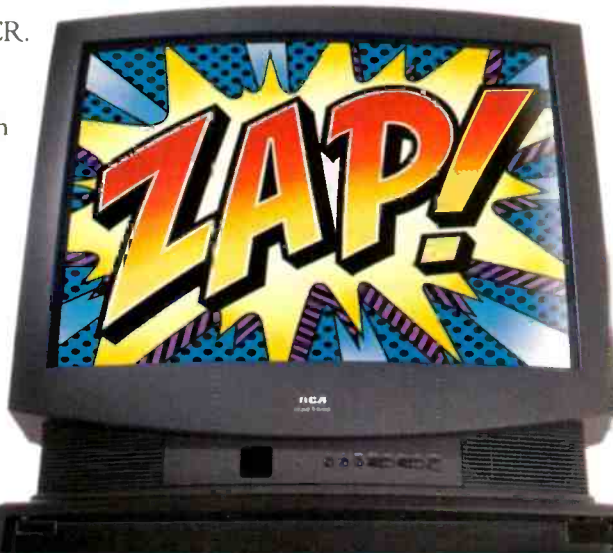
Of course, something more substantial is required for the bass frequencies. The Lifestyle 20 includes essentially the same Acoustimass bass mod-

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And when the

show is



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TEST REPORTS

ule that is familiar from other Bose systems, though it's a bit larger and heavier than some of the earlier models. A chambered enclosure whose output emerges through an opening at one end, it is a black box that weighs in at a hefty 33 pounds and contains not only the bass speaker but also the amplifiers for the entire system (which switch on automatically when a signal

ing an adjacent button. Loading or removing discs is simple and foolproof. Additional magazines can be purchased from Bose for \$39 each.

Although the CD changer does not have the extensive programming capability offered by some separate component CD players, it does provide a random-play mode affecting all the discs in the magazine. The player can

the remote that are used to program the tuner presets.

The rear panel of the Music Center contains sockets for its power supply (a small separate unit) the supplied AM and FM antennas (the 6³/₈-inch-square AM antenna is shown in the photo), tape-recording inputs and outputs, inputs for aux and video sources, and sockets for driving speakers in two different areas (zones) of a house. A second powered speaker system can be operated and controlled from the main Music Center, with either the same or separate program sources in the two zones, using special cables. (A separate remote-control unit is available from Bose that can be adjusted to control only the speakers in the secondary zone.) The Lifestyle 20 comes with a comprehensive instruction manual that covers all aspects of its operation, from unpacking and installing it to using each of its many features.

As a matter of policy, Bose does not publish the sort of specifications for sensitivity, power, distortion, and so on that are commonly used in the audio industry. Although the lack of specs may disconcert audiophiles who get involved in the minutiae of their systems, it makes sense when a company's business is weighted toward nontechnical consumers. Our measurements confirmed that the tuner and CD sections of the Lifestyle 20 are well matched to the true needs of

Despite the unconventional nature of the Lifestyle 20 system and the small size of its speakers and control center, it held its own in comparison with some excellent conventional speakers in its price range.

is applied and consume less than 2 watts in standby mode).

All of the Lifestyle 20 system's cables are fitted with connectors that eliminate the possibility of incorrect wiring or phasing errors. The only external controls on the bass unit are treble and bass level-control knobs, which offer a considerable range of adjustment. Each is center-detented, and after confirming that the center settings provided the best overall sound balance in our room, we used them for our lab and listening tests.

I have saved one of the most impressive parts of the Lifestyle 20 system for last, its Music Center. The level of miniaturization and performance here is as amazing as in the tiny satellite speakers. Previous Lifestyle systems had similar-appearing Music Centers, with tuners, CD players, and control functions, but Bose claims that this one has the world's smallest six-disc CD changer.

The Music Center of the Lifestyle 20 is a sleek, low-profile component, only 2½ inches high, finished in brushed aluminum with rounded front and rear edges. The right third of its front "panel" is a display window, black when the unit is off, that presents the *full* operating status of the system (in highly visible green characters) when it is operating.

The Music Center contains an AM/FM stereo tuner that's conventional in its operation, although it can store up to twenty-five AM and twenty-five FM station frequencies for instant recall. The CD changer is accessed by lifting the hinged front panel, revealing the removable six-disc magazine, which is ejected by press-

also select or skip any disc (or track) in the magazine, but it lacks the usual fast-forward/reverse scanning mode.

The Lifestyle 20 comes with a comprehensive remote control, using UHF radio signals instead of infrared, that can operate the system without being in the same room as the Music Center (its range is said to be 65 feet). Like the main display, this control is a model of clarity, with crisp black letters and symbols on a white background. Most of the buttons on the remote are duplicated under the hinged front panel of the Music Center, where there are also a couple of buttons not found on

MEASUREMENTS

TUNER SECTION

All data for FM only except frequency response.

SENSITIVITY (50-dB quieting)

mono 18 dBf
stereo 36 dBf

NOISE (at 65 dBf)

mono -75 dB
stereo -71 dB

DISTORTION (THD+N at 65 dBf)

mono 0.22%
stereo (mostly pilot-carrier leakage) 2.1%

CAPTURE RATIO (at 65 dBf)

..... 1.5 dB

SELECTIVITY

alternate-channel 76 dB
adjacent-channel 11 dB

PILOT-CARRIER LEAKAGE

19-kHz -70 dB
38-kHz -70 dB

HUM (60/120/180 Hz)

..... -73 dB

CHANNEL SEPARATION

100 Hz 37 dB
1 kHz 36 dB
10 kHz 34 dB

FREQUENCY RESPONSE

FM 20 Hz to 15 kHz +0.5, -0 dB
AM 40 Hz to 2.9 kHz +0.3, -6 dB

CD PLAYER

FREQUENCY RESPONSE

20 Hz to 20 kHz +0.3, -0.7 dB

CHANNEL SEPARATION

100 Hz 92 dB
1 kHz 89 dB
20 kHz 63 dB

QUANTIZATION NOISE

..... -80 dB

DYNAMIC RANGE

..... 81.5 dB

DISTORTION (THD+N)

1 kHz, 0 dB 0.01%
1 kHz, -20 dB 0.01%
20 Hz to 10 kHz, 0 dB 0.3%

LINEARITY ERROR (at -90 dB)

..... -6 dB

MAXIMUM INTERCHANNEL PHASE SHIFT

1.9 degrees

DEFECT TRACKING

Pierre Verany #2 disc 2,400 µm

IMPACT RESISTANCE

..... A

DISC-CHANGE TIME

..... 12 seconds



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the market for which the system was designed. In other words, the figures we obtained reflect a system designed to be *heard* rather than judged primarily by its specifications or laboratory measurements.

For example, the CD player's response, flat within ± 0.2 dB from 40 Hz to 20 kHz, rolled off to -0.7 dB at 20 Hz. Most stand-alone CD players

maintain a flatter response down to well below 20 Hz. In a system such as the Lifestyle 20, whose bass response is defined by its overall design, it is a mark of good engineering to keep the frequency limits of the various program sources within those of the least wide-range component, the speakers.

Similarly, the CD player distortion, between -70 and -80 dB over most of

the useful range, rose to -50 dB (still inaudible) at the extremes of 20 Hz and 20 kHz. At 1 kHz the distortion remained between -79 dB and -81 dB (about 0.01 percent) over the full range of audible signal levels.

The tuner section's performance was also in line with the practical requirements of a music system like this one. The stereo channel separation remained close to 35 dB (audibly sufficient for any musical program material) over the full audio range, and the FM frequency response was ruler-flat over the same range. The 50-dB quieting sensitivity was 18 dBf, about average, and the AM section's response, typical of the genre, was down 6 dB at 40 Hz and 2.9 kHz.

Despite the unconventional nature of the Lifestyle 20 and the small size of its speakers and control center, this system held its own in comparison with some excellent conventional speakers in (and above) its price range. The sound never gave a clue to the size of the speakers — in fact, the miniature cubes have a clear advantage over many larger speakers with respect to their imaging properties. Even though they were in plain view, there was no audible indication that they were the source of the sound. The bass module, while a bit on the large side, never gave a hint of where its sound was coming from. Its close-miked frequency response was within ± 5 dB from 200 Hz down to about 42 Hz. The satellite response was within ± 3 dB from about 250 Hz to 10 kHz and remained strong and useful up to at least 15 kHz.

I even tried something that would have been foolhardy with most speaker systems. While playing a CD, I turned up the volume as loud as I dared. At the opposite end of the room, about 15 feet from the Lifestyle satellite speakers, the sound-pressure level regularly hit 100 dB and averaged in the mid-90's. Even at that deafening level, there were no obvious signs of overload, nor were the speakers damaged in any way.

The Lifestyle 20 is possibly the best example I have seen, and heard, of a music system meant for people who want really good sound but are unwilling or unable to accommodate an ordinary audio installation in their homes. It will fit anywhere, it will not clash with any decor, and (in my opinion) it sounds at least as good as almost any conventional system in its price range, and a lot better than many. □

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TEST REPORTS



BOOK & LENS

Technics SL-MC50 Compact Disc Changer

JULIAN HIRSCH • HIRSCH-HOUCK LABORATORIES

The new SL-MC50 from Technics features yet another variation on the numerous design and styling themes available in today's CD changers. Even though it holds a total of sixty-one discs, sixty in changer slots and one in a single-disc playing slot, it takes up only about the same amount of space as a typical A/V receiver, which it resembles in shape and general appearance.

The SL-MC50 stores discs vertically, in a rack about 7½ inches long that runs parallel to the front panel. There is no external indication of how to load or unload discs, but as the manual explains, you simply pull forward on the top of the front panel, which hinges down (yes, the entire panel!) to reveal the slotted disc magazine. The slot for playing a single disc is separated from the others by a gray divider.

Keeping track of which disc is in which slot is a must in a player with which such capacity. To that end, Technics provides a small plastic binder ("liner-notes organizer") with enough

transparent pockets to accommodate the jewel-box inserts from sixty discs.

The interior of the player is normally hidden from view. Curious about its mechanical features, I removed the cover, which revealed a metal framework surrounding a vertically oriented playing mechanism. The mechanism travels to the selected disc, withdraws it, plays it, and returns it to its assigned slot for storage.

Discs are loaded or unloaded from the changer with the help of a loader carriage that is moved manually to a desired slot (the slots are all visibly numbered). To load a disc, you place it in the carriage with its label side fac-

ing right and raise the carriage arm, which pushes the disc safely into the corresponding magazine slot. Removing a disc is an equally simple task thanks to an ejector button on the loader carriage.

The changer's front panel contains no fewer than thirty-two buttons of various sizes and shapes. In a group at the lower right are buttons carrying the universal symbols for stop, pause, and play. Above them is a group of search buttons for high-speed scanning. A display window at the top center of the panel provides the slot number of the loaded disc, the current track number, and the elapsed playing time. Two large Disk Skip buttons below the window allow you to select or skip discs in the magazine. Smaller buttons allow you to select, skip, or scan the tracks on the loaded disc.

The SL-MC50 has extensive programming capabilities, including all the usual modes such as the order of play (either individual tracks or entire discs) and programmed play of up to thirty-two tracks from any of the discs in the changer. There is also an interesting feature called Direct Programming, which lets you add the track that's currently playing to an existing program group by simply touching one button. Other operating modes include random play from one disc or all discs and skipping discs or tracks

DIMENSIONS: 17 inches wide, 6¾ inches high, 15¼ inches deep

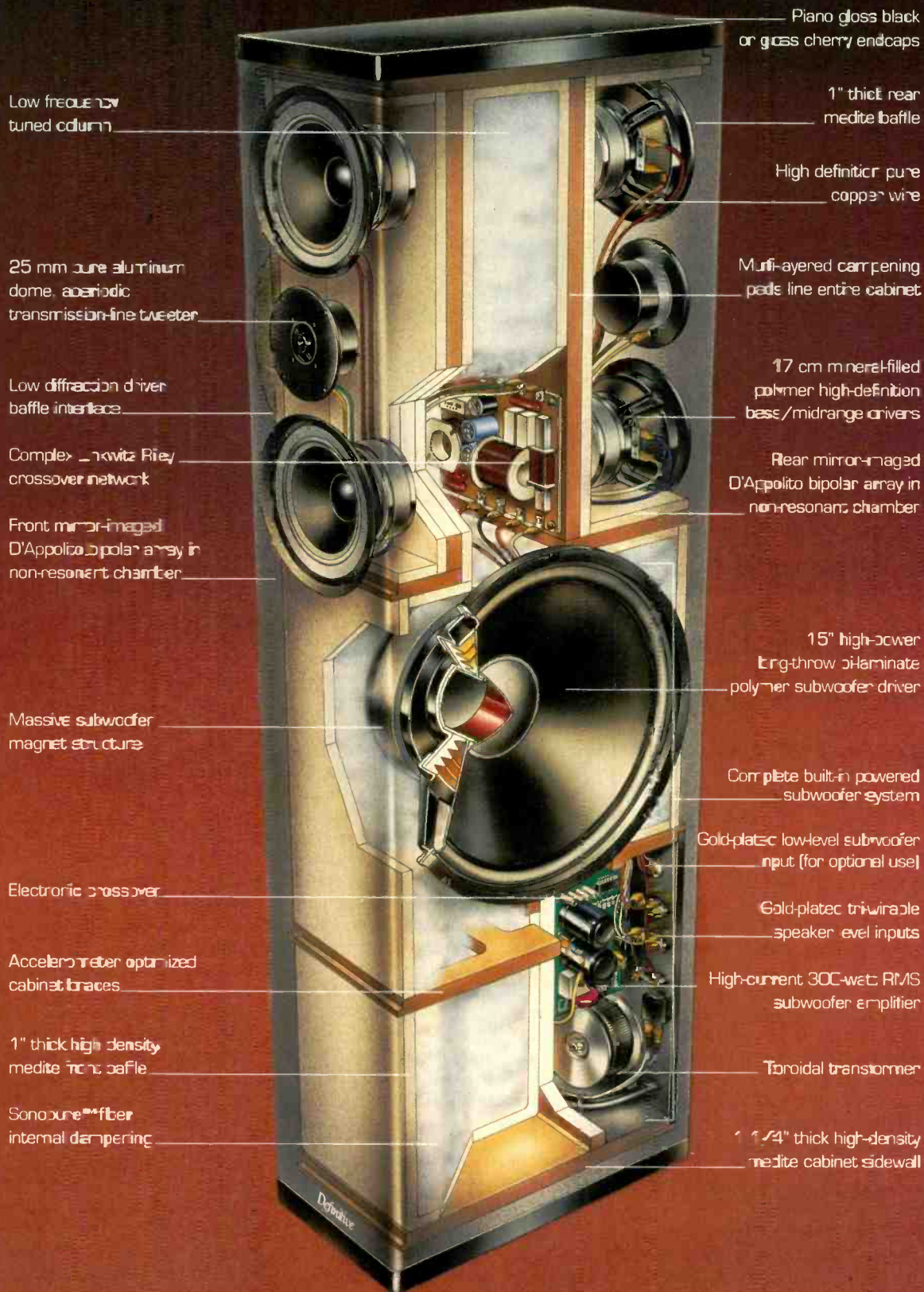
WEIGHT: 13.5 pounds

PRICE: \$400

MANUFACTURER:

Technics, Dept. SR, One Panasonic Way
Secaucus, NJ 07094

Inside Definitive's Revolutionary BP2000



Low frequency
tuned column

25 mm pure aluminum
dome, aperiodic
transmission-line tweeter

Low diffraction driver
baffle interface

Complex Linkwitz Riley
crossover network

Front mirror-imaged
D'Appolito bipolar array in
non-resonant chamber

Massive subwoofer
magnet structure

Electronic crossover

Accelerometer optimized
cabinet braces

1" thick high density
meditec baffle

Sonopure fiber
internal dampening

Piano gloss black
or gloss cherry endcaps

1" thick rear
meditec baffle

High definition pure
copper wire

Multi-layered dampening
pads line entire cabinet

17 cm mineral-filled
polymer high-definition
base/midrange drivers

Rear mirror-imaged
D'Appolito bipolar array in
non-resonant chamber

15" high-power
long-throw laminate
polymer subwoofer driver

Complete built-in powered
subwoofer system

Gold-plated low-level subwoofer
input (for optional use)

Gold-plated tri-wirable
speaker level inputs

High-current 300-watt RMS
subwoofer amplifier

Toroidal transformer

1 1/4" thick high-density
meditec cabinet sidewall

"Definitive's new BP2000 absolutely kills most more-expensive speakers!"

~Brent Butterworth, *Home Theater Technology*

Definitive's New BP2000 Brings You the Ultimate Listening Experience!

"The first speaker I have been able to audition in my own familiar surroundings that has given me that special thrill that usually costs ten or more times its price to obtain."

—Julian Hirsch, *Stereo Review*

"Frankly, if circumstances allowed, I would choose these speakers for myself."

—Julian Hirsch, *Stereo Review*

Speaker of the Decade

Now, with the BP2000, Definitive literally reinvents the loudspeaker. We have combined a six-driver dual D'Appolito bipolar array with a built-in (side-firing) 300-watt powered 15" subwoofer. (Yes, a complete powered subwoofer built into each speaker!) The result is extraordinary sonic performance beyond anything you've ever heard.

Both music and movies are reproduced with unequalled purity, transparency and lifelike realism. And the astounding high resolution imaging and awesome bass impact totally envelop you in sonic ecstasy. They are an amazing achievement!



Each revolutionary bipolar BP2000 (\$1499 ea.) has a built-in 300-watt RMS powered 15" subwoofer for ultimate performance.

The Ultimate Home Theater

In addition to being an audiophile's dream, the BP2000s are also the main speakers in Definitive's AC-3 ready Ultimate Home Theater System. This astonishing system is absolutely the finest sounding available. It recreates a "you are there" spatial reality that actually puts you into the soundspace of the original cinematic action.

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TEST REPORTS

within the current disc or programmed sequence.

The compact infrared remote control not only duplicates all the front-panel control functions but also provides several additional functions. The player has no headphone jack or output level control.

Obviously a very complex and feature-packed component, the SL-MC50 cannot really be described thoroughly in the space available here. Its manual devotes some fourteen extensively illustrated pages to explaining its various modes and features. Probably no one listener will require or use all of its capabilities, but they are there for those who want them. Yet they do not significantly complicate the basic operation for users who simply want a good CD changer with substantially more disc-storage space than most consumer models make available.

Most of our performance measurements agreed closely with the manufacturer's ratings. Only one measurement, the low-level D/A-converter linearity, showed a significant discrepancy. Although the linearity was excellent down to a -70-dB level, an error of about -2 dB appeared at -80 dB (still not serious). At the (inaudible) minimum signal level of -90 dB, however, the player's output error was -12 dB, indicating an essentially nonfunctional conversion of the digital signal to analog form at that level. The error does not affect audible performance, but we were surprised to find it because in our experience the Technics MASH 1-bit converter has always ex-



hibited the excellent low-level linearity that is typical of single-bit digital-to-analog conversion.

In all other respects the SL-MC50's performance was beyond reproach. For example, its frequency response was flat within 0.1 dB throughout most of the audio range (from 10 Hz to about 16 kHz).

The time required to change from one disc to another depends on the discs' relative position in the magazine. A change from Slot 1 to Slot 2 required about 7 to 8 seconds, while going from Slot 1 to Slot 60 typically took 10 to 13 seconds.

The SL-MC50 tracked through fairly high information interruptions on the Pierre Verany #2 test disc, with the first sign of mistracking occurring at a 2,000-micrometer error, which produced a single "tick." Playback was interrupted at the 2,400-micrometer error level, which is better than average performance.

The large unsupported area of the changer's top cover seemed to invite the possibility of mistracking from casual impacts, but, to our surprise, the unit was virtually impervious to mechanical shock. Even a hard slap rarely produced a momentary tick, let alone an interruption of the program.

If you like the idea of having several dozen discs loaded up and ready to play at any time, the Technics SL-MC50 is certainly worth looking into. Its extraordinary programming versatility and special features should be of particular interest to people who enjoy creating their own programs for extended listening — and who don't mind spending some time studying the instruction manual. □

MEASUREMENTS

MAXIMUM OUTPUT LEVEL	2.3 volts
FREQUENCY RESPONSE 20 Hz to 20 kHz +0, -0.19 dB	
CHANNEL SEPARATION	
100 Hz	93 dB
1 kHz	95 dB
20 kHz	79 dB
QUANTIZATION NOISE	-91 dB
DYNAMIC RANGE	93 dB
DISTORTION (THD+N)	
1 kHz, 0 dB	-88.5 dB
1 kHz, -20 dB	-90.5 dB
LINEARITY ERROR (at -90 dB)	see text
MAXIMUM INTERCHANNEL PHASE SHIFT	0.2 degree
DEFECT TRACKING (Pierre Verany #2 disc)	2,400 µm
IMPACT RESISTANCE (top and sides)	A
DISC-CHANGE TIME	see text

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- AK: Alaska Audio; Juneau; Pyramid; Anchorage.
- AL: Cohen's Electronics; Montgomery; Kincaid's TV; Tuscaloosa; Ltkis Audio; Birmingham.
- AG: Custom Audio Video; Little Rock.
- AJ: Jerry's Audio Video; Phoenix; Tucson.
- CA: Access to Music; Carlsbad; Accurate A/V; S. Lake Tahoe; Audio Concepts; Long Beach; San Gabriel; Bay Area Audio; San Jose; Creative Hansen; West LA; Coastal Satellite; Atlascedero; Santa Maria; Creative Stereo; Santa Barbara; Ventura; David Rutledge Audio; Palm Desert; DB Audio; Berkeley; Digital Ear; Justin Larson & Redding; Monterey Stereo; Monterey; Pacific Coast A/V; Newport Beach; Paradym; Sacramento; Performance Audio; San Francisco; Sound Co.; Escondido; San Diego; SpeakerCraft; Riverside; Systems Design; Redondo Beach; Videotek; Westminster; Westchester TV; Bakersfield; Wilson A/V; Woodland Hills.
- CO: Listen Up; Denver; Boulder; Colorado Springs.
- CT: Al Franklin's; Hartford; Carson's Audio Video; Danbury; Robert's Audio Video; New London.
- DC: Suburbs; Audio Buys.
- DE: Sound Studio; Newark; Wilmington.
- FL: Absolute Sound; Winter Park; Audio Advisors; West Palm Beach; Audio Center; Deerfield Beach; The Audiohouse; Vero Beach; Cooper for Stereo; Clearwater; Hoyt Stereo; Jacksonville; Palm Audio; Destin; Sensuous Sound; Tampa; Sound Components; Coral Gables; Sound Ideas; Gainesville; Sound Insight; Ft. Pierce; Stereotypes; Daytona Beach; Stereo World; Ft. Myers; Naples; Stuart A/V; Stuart; GA: Audio Warehouse; Savannah; Ken's Stereo Jct.; Macon; Laser Disc Enterprises; Atlanta; Merrill TV; Columbus; Stereo Connections; Valdosta; Stereo Festival; Atlanta; Stereo Shop; Martinez.
- HI: Audio Center; Honolulu; Waijahu.
- IA: Archer Audio Video; Ft. Dodge; Audio King; Cedar Rapids, Des Moines; Audio Video Logic; Des Moines; Audio Visions; Sioux City; Camera Corner; Davenport; Hawkeye A/V; Iowa City; Waterloo.
- ID: Ultimate Electronics; Boise; Wise Buy; Idaho Falls.
- IL: United Audio Ctrs.; Chicago; Suburbs; Camera Corner; Bloomington; Cars & Stereo; Rockford; Jon's Home Ctr.; Quincy; 3d Forum; Crystal Lake; Select Sd; Naperville; Sundown A/V; Springfield.
- IN: Audio Video Lifestyles; Fort Wayne; Ovation Audio; Clarksville; Indianapolis.
- KS: Accent Sound; Overland Park; Advance Audio; Wichita; Audio Junction; Junction City; Manhattan.
- KY: Ovation Audio; Lexington; Louisville.
- LA: Alterman Audio; New Orleans; Metairie; Sound Advice; Baton Rouge; Wright's Sound Gallery; Shreveport.
- MA: Cookin'; Chestnut Hill; Saugus; Goodwins Audio; Boston; Shrewsbury; Nantucket Sound; Hyannis.
- MD: Audio Buys; Annapolis; Gaithersburg; Laurel; Rockville; Waldorf; Gramercy; Ball; Ellicott City; Soundscape; Baltimore.
- MI: Cookin'; Northland.
- MI: Pecar's; Detroit; Troy; Classical Jazz Holland; Classic Stereo; Kalamazoo; Grand Rapids; Front Row A/V; Flint; Court St. Listening Room; Midland; Saginaw.
- MN: Audio Design; Winona; Audio King; Minneapolis & Suburbs; Rochester; St. Cloud; Audio Perfection; Minneapolis.
- MO: Independence A/V; Independence; Sound Central; St. Louis.
- MS: McLelland TV; Hattiesburg; Players A/V; Ridgeland.
- MT: Aspen Sound; Missoula; Car & Home Stereo Ctr.; Billings; Rocky Mt. Hi Fi; Great Falls.
- NC: Audio Video Systems; Charlotte; Audio Visions; Wilmington; Now Audio Video; Durham; Greensboro; Raleigh; Winston Salem; Audio Lab; Wilmington; Tri City Elect.; Concord.
- NE: Custom Electronics; Omaha; Lincoln.
- NH: Cookin'; Nashua; Manchester; Newington; Salem; S. Nashua.
- NJ: Hal's Stereo; Trenton; Monmouth Stereo; Shrewsbury; Wall; Sound Waves; Northfield; Woodbridge Stereo; West Caldwell; Woodbridge.
- NM: Ultimate Elect.; Albuquerque; Sound Ideas; Albuquerque.
- NV: Ultimate Elect.; Las Vegas; Upper Ear; Las Vegas.
- NY: Audio Breakthrough; Kenoset; Audio Den; Lake Grove; Audio Expressions; Newburgh; Audio Junction; Watertown; Clark Music; Albany; Syracuse; Stereo Exchange; Manhattan; Manuett; Hart Elect.; Ithaca; Vestal; Innovative Audio; Broome; Listening Room; Searsdale; Rowe Camera; Rochester; Sound Mill; Mt. Kisco; Yorktown Hts.; Speaker Shop; Amherst; Buffalo.
- OK: Contemporary Sounds; Ok City; K Labs Premium Audio; Tulsa; Photo World; Bartlesville; Ultimate Electronics; Tulsa.
- OH: Audio Crall; Akron; Cleveland; Mayfield Hts.; Westlake; Audio Etc.; Dayton; Paragon Sound; Toledo; Threshold Elect.; Heath.
- OR: Bradford's HiFi; Eugene; Chelsea A/V; Portland; Beaverton; Kelly's Home Ctr.; Salem; Larson's; Medford; Roseburg; Stereo Plant; Bend.
- PA: Audio Junction; Pittsburgh; Gary's Elect.; State College; GNT Stereo; Lancaster; Hart Elect.; Blakely; Kingston; Hi Fi House; Abington; Broomall; Camp Hill; Harrisburg; Listening Post; Pittsburgh; Palmer Audio; Allentown; Pro Audio; Bloomsburg; Stereoland; Natrona Heights; Studio One; Erie; The Stereo Shop; Greensburg.
- RI: Stereo Discount Ctr.; Providence.
- SC: A/V Design; Charleston; Custom Theater & Audio; Myrtle Beach; Upstate Audio; Columbia.
- SD: Audio King; Sioux Falls.
- TN: College HiFi; Chattanooga; Hi Fi Buys; Nashville; Now Audio Video; Knoxville; Modern Music; Memphis; New Wave Elect.; Jackson; Sound Room; Johnson City.
- TX: Home Entertainment; Dallas; Houston; Plano; Audio Tech; Temple; Waco; Audio Video; College Station; Brock A/V; Beaumont; Bunkley's Sd. Systems; Abilene; Bjorn's; San Antonio; High Fidelity; Austin; Krystal Clear; Dallas; Marvin Electronics; Ft. Worth; Sound Box; San Angelo; Sd. Quest; El Paso; Sd. Systems; Amarillo; Sd. Towne; Texarkana.
- UT: Alpine Elect.; Provo; Audio Works; Salt Lake City; Crazy Bob's; St. George; Stokes Bros.; Logan; Ultimate Elect.; Layton; Murray, Orem; Salt Lake City.
- VA: Audio Buys; Arlington; Fairfax; Falls Church; Manassas; Audio Connection; Virginia Beach; AudioGraphics; Roanoke; Home Media Store; Richmond; Stereo Type; Charlottesville.
- VT: Audio Video Authority; S. Burlington.
- WA: Aspen Sound; Spokane; Definitive Audio; Bellevue; Seattle; Evergreen Audio; Silverdale; Pacific Sight & Sound; Wenatchee; Tim Ear; Kennewick.
- WI: Sound Post; Princeton.
- WI: Audio Emporium; Milwaukee; Absolute Sd.; & Vision; Sheboygan; Hi-Fi Heaven; Appleton; Green Bay; Sd. World; Wausau.
- Puerto Rico: Precision Audio; Rio Piedras.
- Canada: A & B Sound; Calgary; Edmonton; Kelowna; Vancouver & Suburbs; Victoria; Advance Electronics; Winnipeg; Bay Bloor Radio; Toronto; Centre Audio Charest; Trois Rivières; CDRA; Quebec City; Digital Dynamics; Clearbrook; Great West Audio; London; Kebecson; Montreal; Lipton's; New Market Ontario; Peak Audio; Halifax; Sound Room; Vancouver; StereoLand; Windsor; Treble Claf; Ottawa.
- Mexico: Contact Grupo Volumen; Mexico City.

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"Showstoppers" – Stereo Review

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USER'S REPORT



LOOK & LISTEN

Paradigm LRC HT Home Theater Speaker System

DAVID RANADA • TECHNICAL EDITOR

Paradigm, based in Canada, has with its LRC HT produced a home-theater speaker system of uncommon quality and even more uncommon value. The system consists of three identical front speakers, a pair of matched surrounds, and a subwoofer module, all of which are available separately but whose total price is only \$2,145.

The driver complement and layout of the magnetically shielded LCR-450 front speaker (\$399 each) enable it to be operated either horizontally or vertically, making it suitable for both center and left/right main speaker duties. Each LCR-450 contains a 1-inch aluminum-dome tweeter flanked by two "bass/midrange drive units" with 6½-inch mineral-filled polypropylene cones. Crossover takes place at 1.5 kHz via a fourth-order electroacoustic network. Nominal impedance is 8 ohms, and anechoic sensitivity is given as 87 dB sound-pressure level (SPL) with a 1-watt input, or 90 dB in a typical listening room.

The 21 x 8 x 11½-inch, 25-pound enclosure is available finished in either

black oak-grain or black gloss vinyl. Connections are via gold-plated multi-way binding posts, and facilities are provided for biwiring or passive bi-amplification (in which the internal crossover remains connected).

As might be expected from a Canadian speaker company whose products may be exposed to very low temperatures, Paradigm recommends that if the LCR-450's have been transported at or below 50° F (10° C), they should be allowed to warm up to room temperature before use. The material used in the surrounds of the bass/midrange drivers is made of a compound that may stiffen at low temperatures, Paradigm says, and the ferrofluid used to cool the tweeter itself thickens in cool temperatures.

Three vinyl finishes are available for the ADP-150 surround speaker (\$429 per pair): graphite (black), oak, and white. Each surround measures 10½ inches high, 8¾ inches wide, and 6½ inches deep and weighs about 12 pounds. The drivers are two ¾-inch polyamide-dome tweeters and two 5½-inch polypropylene cone bass/

midrange units operating in what Paradigm calls an "adapted dipole" configuration. That arrangement is used, the company says, "to retain a balanced level of bass when [the ADP-150's are] mounted on (or near) the side walls of your room."

The manual recommends placing the ADP-150's to the sides of the listening position, 3 to 9 feet above the floor, with at least 18 inches of free space on either side of each speaker. Wall-mounting hardware and a mounting template are supplied, with instructions in English and French (I like the way "installing wall hardware into drywall" turns into "*installation de la quincaillerie au mur dans le gypse*"). Hookup is via push connectors. Anechoic sensitivity is given as 86 dB SPL (89 dB SPL in-room) and nominal impedance as 6 ohms, 4 ohms minimum.

Paradigm doesn't ever call any of the larger drivers in the LCR-450 or ADP-150 a "woofer." That's because the low bass in the LCR HT system is supposed to be handled by the PS-1000 powered subwoofer (\$519). Like most models of its type, the PS-1000 has a variety of connections available. There are speaker-level inputs with direct-wired speaker-level outputs (all push connectors) as well as line-level inputs (preferable) with their corresponding high-pass-filtered line-level outputs (all phono jacks). The filtering of the line-level outputs, when fed back into the amplification chain driving the LCR-450's, allows them "to handle more power with lower distortion for a dramatic improvement in dynamic range and overall clarity," as the PS-1000 data sheet puts it. The high-pass filters roll off at 18 dB per octave below 80 Hz.

The power amplifier in the PS-1000 is rated at a hefty 130 watts and has such features as auto on/off, soft clipping, and thermal-overload protection. It powers a single 10-inch driver operating in a band-pass enclosure, which means that you can't see the cone but only three 3-inch vents on the sub's rear panel. The enclosure, finished in black oak-grain vinyl, measures 16¾ x 17 x 19 inches and weighs 58 pounds.

The Paradigm powered subwoofer is only the second subwoofer system I have encountered that incorporates a phase control in addition to the standard polarity-flip switch, level control, and crossover-frequency control (variable here between 50 and 150 Hz). Paradigm describes the phase control



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USER'S REPORT

accurately and succinctly: It "controls the phase (or time) relationship of the subwoofer relative to [the] main/satellite speakers through their frequency overlap region."

A phase control is most useful when a considerable distance — more than a yard, say — separates the subwoofer from one or both of the main speakers. That is usually the case when the subwoofer is hidden away or, as in our listening room, placed in a corner while the main speakers remain centrally located. To some degree, a subwoofer phase control is even more useful than the usual polarity-flip switch since the latter makes very little difference in the response outside the crossover region, especially if high-pass filtering is used for the main speakers.

Unfortunately, it's difficult to adjust any subwoofer control, including a phase control, correctly using only music: You can never be sure that the disc(s) you use for testing will fully exercise the frequencies in the crossover region so that all other discs will also sound their best. Nonetheless,

one-third-octave response ranging from 40 Hz to 20 kHz with only a ± 3 -dB deviation. Above 500 Hz, where the subwoofer has no effect, the response was even flatter, ± 1.75 dB from 500 Hz to 20 kHz. The curve has a shallow "saucer" profile above 500 Hz, however, with the deepest part of the dip being -2.6 dB at 3.15 kHz relative to endpoints at 500 Hz and 16 kHz. Measured alone, the subwoofer produced its maximum output at 50 Hz and had usable output down to 30 Hz, all with low distortion at reasonable listening levels.

In listening tests, which were conducted mainly with music, the overall frequency balance of the system proved to be excellent, which in this case means unusually neutral. While the LCR-450 front speakers did not sound absolutely neutral on everything (no speakers we have tested have), the remaining colorations were so well controlled that with an extremely wide variety of music I was only occasionally able to hear them. Depending on the program material, I could some-

both at home and, especially, during an in-store audition. Their response becomes more colored once you are about 30 degrees off-axis vertically. The center speaker should ideally also be at ear level, but placement considerations usually rule that out.

Several hours of continuous listening at fairly high (close to live) levels produced no sense of listening fatigue with good musical program material, nor did the speakers ever give any signs of being in distress even with explosive Dolby AC-3 movie soundtracks. Note, however, that all our reactions derive from an amplifier/subwoofer-loopback hookup intentionally configured to prevent the high levels of deep bass that can be obtained from AC-3 soundtracks from reaching either the front or surround speakers. The PS-100 subwoofer adeptly carried the full burden of deep bass in our best-case hookup (covered in the subwoofer manual as connection options Nos. 1 and 3). Different results may be obtained from a less than optimum subwoofer connection, such as one that doesn't utilize the subwoofer's high-pass loopback outputs.

If you were thinking of going whole hog and investing in a full Home THX speaker system, consider giving the much more economical Paradigm LCR HT a serious audition. The basic neutrality of its sound rivals that of all the Home THX models we have tested. It will come up short primarily in its ability to put out theatrical levels of deep bass (a specialty of THX speaker systems), but such levels are probably too loud for most domestic listening anyway. Adding a second PS-1000 subwoofer will increase the system's maximum bass output while keeping the total speaker cost below that of all the Home THX systems we know of. Conversely, if you are on a tight budget, try as hard as you can to save enough for the Paradigm LCR HT, a system that sets an enviable performance standard in its price class. You might even start out with a pair of LCR-450's and a single PS-1000, an excellent three-piece stereo speaker system for \$1,317, and add the rest of the speakers later to get into surround sound. Your frugality will be amply rewarded by the sonic riches of one of the best home-theater speaker systems we've tested. □

*Paradigm, distributed by
AudioStream, Dept. SR, MPO Box 2410,
Niagara Falls, NY 14302.*

In listening tests, which were conducted mainly with music, the overall frequency balance of the Paradigm LCR HT system proved to be excellent.

Paradigm's instructions on how to adjust the PS-1000 to match the sound of the LCR-450's are among the best I have seen, even though the procedure requires two people and musical judgment calls.

As usual, to save time and to achieve the best overall results, I set up the LCR HT system using instruments (a spectrum analyzer fed by a lab microphone picking up pink noise), a procedure I heartily recommend if your dealer offers to do it for you. We put the single subwoofer in a room corner and placed the LCR-450's away from the side and front walls on 25-inch stands, with the left and right speakers vertically oriented and the center speaker horizontal. After about half an hour of fiddling with the subwoofer controls, which interact with each other a great deal, I obtained what for our listening room was an excellent response. Ignoring a slight dip at 100 Hz that further adjustment and experimentation with subwoofer placement might have eliminated, the LCR-450/PS-1000 system yielded a

times hear the mild swayback of the response above 500 Hz as a slight hint of excessive brightness on classical strings or sibilance on voices. At other times I heard the slight overall downward tilt of the response above 500 Hz (relative to lower frequencies) as a tinge of lower-midrange heaviness. That these colorations were rare in appearance and program-dependent only emphasizes the appealing neutrality of the LCR-450. Any other sonic deficiencies we heard could be traced to the known problems of the recordings.

With the left and right front speakers placed vertically, imaging was very good in both conventional stereo and surround sound, though not as tightly pinpointed as it can be with speakers having more deliberately restricted vertical dispersion. The imaging qualities of the LCR-450's strike a good compromise between the sometimes divergent reproduction demands of movie soundtracks and music. I recommend vertical placement of the left and right LCR-450's so that their tweeters are at or close to ear level,

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Stereo Review

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CIRCLE NO. 6 ON READER SERVICE CARD

Get Ready To RUMBLE

How to buy a subwoofer
and set it up by Daniel Kumin



Of course you don't *need* a subwoofer. But once you experience the bone-rattling sound effects of a movie like *Jurassic Park* or *True Lies* on a system that has a subwoofer, you'll definitely *want* one. Subwoofers can add drama to music, too, especially recordings that have lots of deep bass, like Telarc's version of the *1812 Overture* (known for its thunderous cannon shots).

But adding deep-bass capability to a home theater or audio-only system is a bit more involved than most people realize. First, the lower the bass frequency, the longer the wavelength, and thus the harder it is (in the physics sense) to reproduce. (That's why a tuba is so much bigger than a cornet — it's basically a trumpet with an enormous acoustic amplifier.) Second, when a low-frequency sound's wavelength is similar to the room dimensions — which is often the case, considering that bass wavelengths are typically 10 to 40 feet — it can interact with room boundaries (floor, walls, and ceiling) to create

resonances (standing waves), which can have a profound effect on the sound.

While some listeners are perfectly content with the superb tonal accuracy and realistic imaging produced by today's best compact speakers, others follow an essentially bottomless quest for clean, robust deep bass. And for many of us, the best way to get it is with a subwoofer.

THE LOWDOWN

There's no hard and fast rule for what constitutes a subwoofer. But in my book a true sub is a speaker designed to reproduce frequencies below about 150 Hz, with unattenuated response that extends significantly below 40 Hz, roughly the lowest note on a bass fiddle or bass guitar. A bona fide sub must also be capable of delivering substantial sound-pressure levels (say, at least 90 dB) in an average-size room.

Far from being the esoteric add-on it once was, the stand-alone subwoofer is reaching "must have" status these days, thanks in large part to the home theater boom (pun intended). Virtually every major speaker company now offers one or more subwoofers, so you'll have plenty of models to choose from when you're ready to hit the shopping trail. Most are legitimate subs, but some — especially the models packaged with rack systems and certain three-piece speaker systems — are simply "bass bins" that don't reach down deep enough to qualify as full-fledged subwoofers.

Of course, it is entirely possible to engineer genuine deep-bass response into a full-range (usually tower-style) loudspeaker, and many excellent examples exist. Yet separating the woofers from the midrange drivers and tweeters can bring several benefits. For one thing, the higher-frequency drivers don't have to work nearly as hard, which should translate into lower distortion. For another, keeping deep bass away from midrange drivers should improve imaging stability and depth.

But the best pro-subwoofer argument has to do with something far less technical: installation flexibility. Putting the woofers in a separate enclosure allows the main speakers to be small and unobtrusive, and therefore easier to situate. The main speakers can be positioned on shelves or stands for optimum imaging while the subwoofer is placed to achieve the best possible bass performance (usually in a corner). It's extremely difficult — if not impossible — for the human ear to pinpoint the source of very low frequencies (below about 80 Hz), so output from a subwoofer will seem to radiate from the





Bag End's ELF-P18 infra-SUB (\$1,295), with an 18-inch driver, a 400-watt amp, and proprietary circuitry, is rated down to 8 Hz.



JBL's compact 11½ x 18 x 17-inch PSW1000 (\$400) packs a 10-inch driver, a 100-watt amp, and an adjustable crossover.



M&K's 23-inch-tall MX-200 (\$1,495) delivers output down to a rated 18 Hz from two 12-inch drivers powered by a 200-watt amp.

main speakers even if the sub is located on the other side of the room.

SUB SELECTIONS

There are two basic types of subwoofers: powered (or active) and nonpowered (or passive). These days, most subwoofers are powered, meaning that they combine one or more woofers, a low-bass-optimized mono amplifier, and crossover circuitry in a single box. Get rid of the onboard amplifier and crossover, and you have a passive subwoofer.

The one-piece powered subwoofer has a lot going for it. It reduces gear-creep, conserves space, and — most important — mates the driver/box combo to a dedicated amplifier. Presumably, these are specifically engineered to work together, with the enclosure, transducer, and amplifier designs all complementing one another. Powered subwoofers also incorporate the all-important crossover — in theory one of a type and character that match the response characteristics of the woofer system. A nonpowered, “passive” sub, on the other hand, might be more economical if you already own a power amplifier (or have a spare amp channel) that's suitable for low-end duties and an external electronic crossover, or can use the crossover built into an A/V receiver, preamp, or processor.

Yet powered subs are where 90 percent of the action is today, and it's hard to dispute their value and space savings. How to choose one, however, is less clear-cut. It's well nigh impossible to audition subwoofers in the store. Most of what you hear is from the main speakers, not the sub, and listening to subs alone is singularly unenlightening. A/B comparisons are equally useless because of the influence of room acoustics and the difficulty of matching levels.

Consequently, the subwoofer is one component where the design, materials, and manufacturer's reputation — and the recommendations of an experienced and knowledgeable consultant — are usually more important than in-store trials. Yet the proof of the pudding comes, as always, at home with your own system, so ask for an at-home trial before you commit to buying a particular model, or be sure you can return it for credit.

It would be awfully convenient if you could simply assume that a sub with a 15-inch driver was 25 percent

“better” than a competitor with a 12-inch, but as is so often true, bigger is not necessarily better. For one thing, the enclosure is at least as important as the speaker itself. Most subs use an acoustic-suspension (sealed-box) design for the deep-bass extension it can provide from a small box, but vented enclosures are by no means rare. Bandpass boxes, with multiple chambers vented in various interesting ways to squeeze more bass from small boxes and small drivers, are also popular, though relatively few of them deliver truly *deep* bass. Many audiophiles feel that sealed woofers sound “tighter” and “faster,” though this may be just an intellectual subjective influence — plenty of vented woofers provide deep, well-defined bass.

You'll also come across models that use other ways to reduce bulk without compromising deep-bass performance. Subs with two smaller drivers (8- or 10-inch) or with two 12-inchers in a space-saving “push-pull” configuration are just two examples. You *can* get powerful and extended deep bass from a relatively small package, but as a broad rule, woofers that go louder and deeper tend to be larger.

Similarly, you might be inclined to think that a subwoofer with a built-in 200-watt power amplifier would play louder than one with only 100 watts on board, but it ain't necessarily so. Differences in the drivers and enclosures, and how they work together, can easily account for at least a 3-dB variance in sensitivity — equivalent to doubling or halving the power — so the 100-watt subwoofer could well play louder and deeper than the 200-watter. Designers of powered subwoofers usually build in just enough wattage to drive the system to the limit of its undistorted potential, and no more: There's no point in spending precious dollars on additional power the system can't use.

FINDING THE RIGHT ONE

“So how do I go about choosing the right subwoofer?” Good question. Though loudspeaker spec sheets in general are notoriously uninformative, subwoofer lit sheets tend to be somewhat useful. At the very least, they usually specify a low-frequency limit (something like “-3 dB at 35 Hz”) and an output level in a “typical” listening room (“90 dB SPL at 70 Hz,” for ex-

ample). But keep in mind that there's really no such thing as a "typical" room, which is why a home listening trial is so important. How low a given subwoofer plays can change from one room to another thanks to the vagaries of room acoustics.

Low-frequency limit is probably the most important spec to investigate while surveying the subwoofer landscape. If your goal is simply to add musically satisfying bass to a pair of small speakers, a subwoofer that yields an honest 40 Hz will do the trick. In natural acoustic music, very little actually happens below 40 Hz, and a sub with full output at this frequency will almost certainly still produce some output down to, say, 30 Hz — plenty low for all but the most demanding music (and listeners). If, on the other hand, you seek big-action home-theater impact (or have a penchant for high-volume rap, house, or industrial music), look for subs rated to play down to 30 Hz or even lower.

Big-budget motion pictures frequently deploy enhanced bass in their music tracks and synthetically produced rumblings in the 20- to 35-Hz range to create tension, ambience, and a sense of impending doom — to say nothing of those nuclear detonations and interstellar fly-bys, which also rely heavily on ultra-lows for their "wow" effect. And, of course, many modern music genres rely on synth-bass that plunges to depths below 30 Hz at scary volume levels.

When you finally get a subwoofer home for evaluation, try not to focus solely on how low (and loud) it plays. (See "Ear to the Ground" on page 62 for tips on how to install and balance a subwoofer.) Listen for smoothness, particularly in the crossover region, where the subwoofer output needs to blend with the main speakers. Pay attention to bass definition as well. A subwoofer that sounds muddy or boomy may have unwanted resonance, crossover slopes that are too shallow, or both. Be fussy: There's a lot of variation in performance here. Just keep in mind that the room, and where you put the sub in the room, will have a profound influence on the character of the bass.

Make sure the subwoofer you're considering can deliver adequate volume by playing energetic, full-range music (or movie segments) as loudly as you'll likely ever to want to hear them — and then crank it up a little bit more (but whatever you do, *don't play*

test tones at those levels!). Run through a few different selections to be sure you're exercising a wide range of frequencies. Listen closely for any audible signs of distress, especially for port "chuffing" in the case of a vented or bandpass sub. You probably won't hear any with the full system playing.

Now switch off (or disconnect) all of the speakers except the sub, and replay the demo selections without changing the master volume. Listen again for port noise, obvious distortion, clacking sounds when a driver hits its stop, and other unnatural sounds. Chances are you'll be able to hear a few imperfections, especially from the port of a vented model. But before you draw any conclusions, make sure you've accounted for all of the buzzes and rattles created by vibrating furniture and other things in your room. Once you're familiar with the sub's warts in this exposed mode, fire up the full system and listen again. If you can't discern them this time, you have nothing to worry about. But if they're still audible, and remain so when the master volume is reduced a click or two, look for a better sub.

THE HIDDEN LIFE OF LOWS

There's more to a powered subwoofer than meets the eye (or ear). Of the various "extras" that reside inside, by far the most important is the crossover network that sends bass below a particular cutoff frequency, or crossover point, to the subwoofer and, in the case of a two-way crossover, frequencies above that same point to the system's main speakers. Aside from the cutoff frequency, another important crossover characteristic is slope: how sharply the circuit limits frequencies above or below the cutoff. A typical slope is 12 dB per octave, which means that the woofer-bound low-pass signal from a crossover set to 100 Hz would be more than ten times "softer" at 200 Hz (an octave higher). In the case of a two-way crossover, the mid-range/tweeter-bound high-pass signal would be down 12 dB at 50 Hz (one octave lower).

The role of the crossover in subwoofers is critical for at least two reasons. First, since the drivers used in most subwoofers are not designed to reproduce sounds above 200 Hz or so, feeding such frequencies to them would simply rob them of efficiency



The Powerfield 1800 sub from Definitive Technology (\$1,599) boasts a 500-watt amp that drives its 18-inch cone down to 13 Hz.



Front-panel and wireless-remote level controls distinguish Cerwin-Vega's 23½-inch-tall HT-12PWR (\$900) powered sub.



B&W's AS6 (\$699) combines a 12-inch driver, a 100-watt amp, and a two-way crossover in a cabinet roughly 18 inches square.



A bottom view of the KLH V-210 (\$700) reveals its 10-inch woofer, dual ports, and 120-watt amp. Low-end rating is 25 Hz.



Mirage's powered BPS-100 (\$480) uses two 6½-inch woofers to attain a rated limit of 30 Hz from its 9¼-inch-tall cabinet.



A 12-inch driver and passive radiator in a bass-reflex cabinet give the Klipsch SW-12 II (\$1,100) a 28-Hz bottom limit.

and increase distortion. Second, if the subwoofer is permitted to operate much above 100 Hz, you'll be able to pinpoint the sounds coming from it, destroying its aural integration with the rest of the system. That's the low-pass side of the story; the high-pass side is equally important. Employing a sub with a two-way crossover that also removes low bass from the signal going to the main speakers almost al-

ways enhances their performance — enhancing headroom, decreasing distortion, and improving imaging.

Most subwoofers with a built-in two-way crossover offer both speaker-level and line-level inputs and outputs, the former usually five-way binding posts or push-terminals and the latter standard RCA jacks. Both sets of inputs usually go to the same place, the sub's internal crossover, but the speak-

er-level signals pass through a resistive divider that pads their level down to standard line voltage. While some subs supply a two-way crossover at both the speaker-level and line-level outputs, many pass speaker-level signals through unmodified so that the left and right mains get an unfiltered full-range signal.

So if you don't want your main speakers to see the low-bass part of the

ear **TO THE** ground

Even after you've gone through the trouble of carting home the subwoofer of your dreams, your work is far from over: You still have to find a place to put it that's both acoustically and aesthetically sound and connect it to your system, which can be a time-consuming task — especially if the sub is across the room from your equipment rack and you want to conceal the wires.

To do the job right, you'll need a strong back, a patient assistant (to help move furniture and throw switches), and a good test CD, preferably one with filtered-noise subwoofer test signals. (The Delos "Surround Spectacular" disc, DE 3179, includes some excellent low-frequency tracks created by STEREO REVIEW Technical Editor David Ranada as well as detailed instructions on subwoofer balancing.) You'll also want to have on hand a stack of music CD's that contain deep

bass as well as "everyday" pop-music bass. A simple sound-level meter, like the one Radio Shack sells for \$35, can also be very useful (before you go out and buy a meter, ask the dealer who sold you the sub if he'll lend you one overnight).

First comes placement. To get the deepest and strongest bass, a corner is generally the best place to put a subwoofer. Unless the room is irregular in shape, any corner will do provided the sub's crossover is reasonably low. But if the crossover is much above 100 Hz, you'll probably have to put the sub fairly close to the main speakers to avoid localization problems. (Bass is completely "nondirectional" only up to a point. As you move up in frequency above about 80 Hz, it becomes increasingly easy to pinpoint the subwoofer's location by ear. On the other hand, if the sub is set up to operate be-

low 50 Hz, you could probably put it in the kitchen and never find it.) Even if you have two subs, corner placement is still usually optimal — with both in the same corner, surprisingly. (For more about subwoofer placement, see "Subwoofer Secrets" in the January 1995 issue.)

Believe it or not, there is a (relatively) easy way to experiment with subwoofer placement without having to lug the beast around the room: Temporarily move the sub to your primary listening position (you'll have to move the chair or couch). With the sub playing alone and its crossover set to its highest frequency, put your CD player in repeat mode and play a test track with a low-frequency sweep tone that goes from roughly 100 to 20 Hz (Track 19 on the Delos disc). Then move from one likely location to another *and listen with your head near*



The ADS MS3 (\$1,099 to \$1,249 depending on finish) has an active-servo amp for tight control of its 10-inch woofer down to 20 Hz.



Boston Acoustics' VR2000 (\$1,200, rear panel shown) is said to be the smallest single-unit powered sub meeting THX specs.



A servo-controlled 12-inch woofer with a spun-aluminum cone and a high-gain amp are featured in Velodyne's new HGS-12 (\$1,500).

signal (a good idea if you have small satellite speakers), make sure the subwoofer you're considering has a two-way crossover scheme that you can work with. There's enough variety in the subwoofers on the market to make this a confusing area, indeed. The diagrams on page 64 lay out a few of the most common connection schemes.

The trick is in finding the cutoff frequency (and slope) that seamlessly

melds the sub with your main speakers — a challenge that often requires patient (and sometimes backbreaking) trial and error. Fortunately, the crossovers in most powered subwoofers are adjustable, typically providing crossover-frequency settings in the 50- to 200-Hz range. Adjustments may be made with a continuously adjustable knob or a click-stop control that has three or more fixed settings. All pow-

ered subs also have a level adjuster, which is simply a volume control for the sub's amplifier.

Other features and controls you might come across in powered subwoofers include:

PHASE (POLARITY) SWITCH. This inverts the sub's output, which can be useful in matching it with the main speakers. There's no useful way to predict which setting is right — you just

the floor, where the subwoofer would be. The location that yields the strongest sound in the bottom two octaves, without "lumpiness" in the 80- to 40-Hz region, is your sweet spot. That may well turn out to be the corner behind the left or right main speaker. Psychologically speaking, I prefer the right side since that's where the contrabasses sit (stand!) in an orchestra.

Now move the subwoofer to the chosen spot and repeat the test while sitting in your primary listening position; the sound should be identical, or nearly so. Next, fire up the main speakers with the receiver/amp in stereo (not surround) mode and roll the balance control all the way over to the side where the sub is placed. Set the sub's crossover to your best-guess frequency (start at 120 Hz if you haven't a clue) and its level control to some nominal midpoint. Play a couple of filtered-noise bands close to the crossover frequency (Tracks 23 to 26 on the Delos disc for a 120-Hz crossover point) and flip the sub's phase switch at each frequency. Usually, the position that yields the loudest composite bass response (sub plus main speak-

ers) is the best choice: use the sound-level meter to help settle tough calls.

Now play some music. Start out with well-recorded pop or jazz that's rich in the 50- to 80-Hz region but shy lower down. Set the sub's output level a bit on the loud side, and perk up your ears. What you're listening for is *evenly* bloated bass: too rich, certainly, but without any obvious "wolfs," or notes that sound unnaturally louder than the others. You may have to fine-tune the sub's location by moving it a foot or so into or away from the corner (or toward or away from the wall). If you can't seem to get an even response, try flipping the phase switch. Failing that, try moving the sub to your second-choice location from the ear-on-the-floor experiment.

When you find the magic spot, lower the sub's crossover frequency a bit beyond the point at which pop-music bass starts to sound lean; then raise the sub's output level to regain a rough balance. Listen some more; you're zeroing in now. It may be worth repeating this whole procedure with a few different crossover settings, but be reasonable: If you know the response of

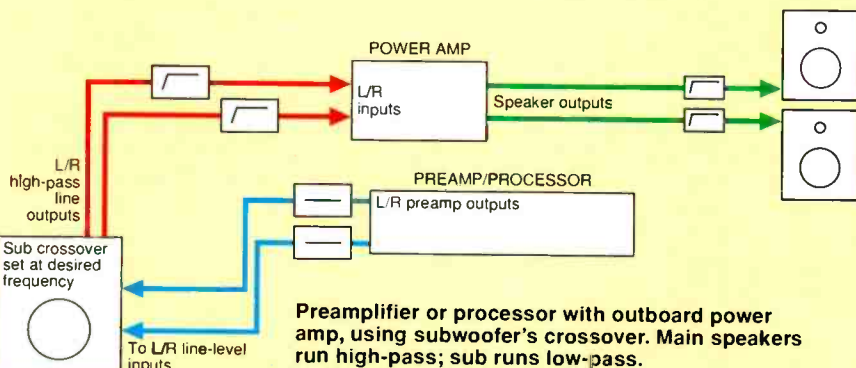
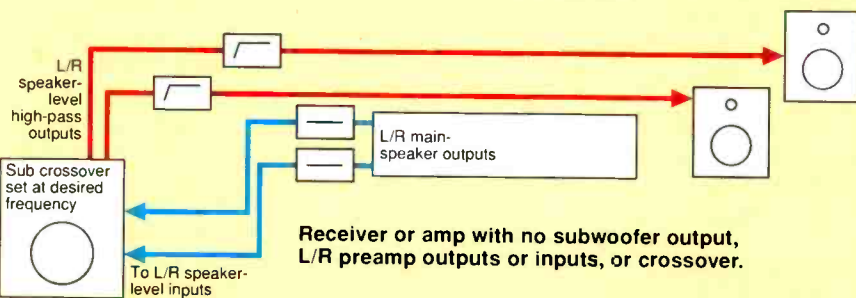
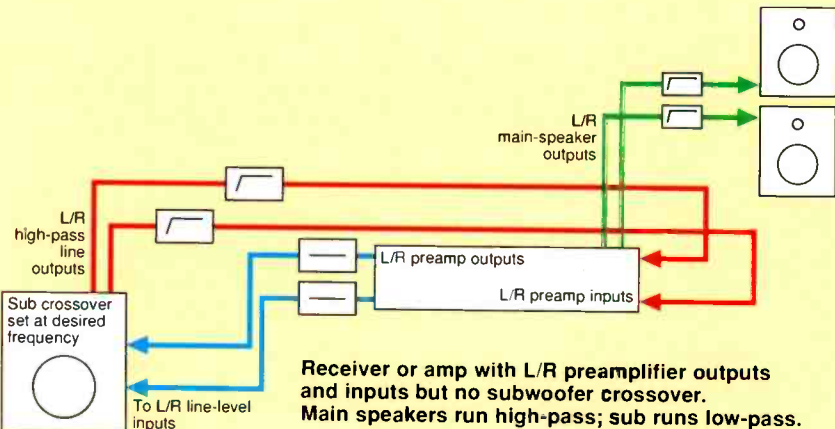
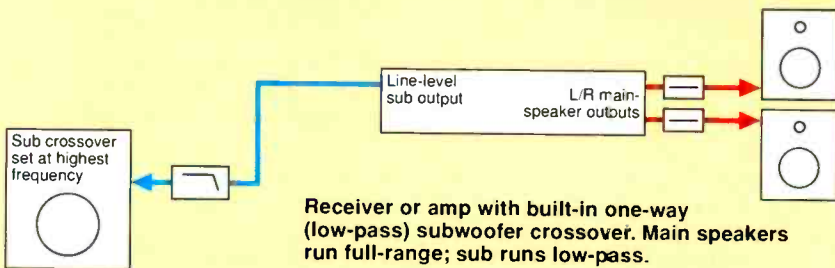
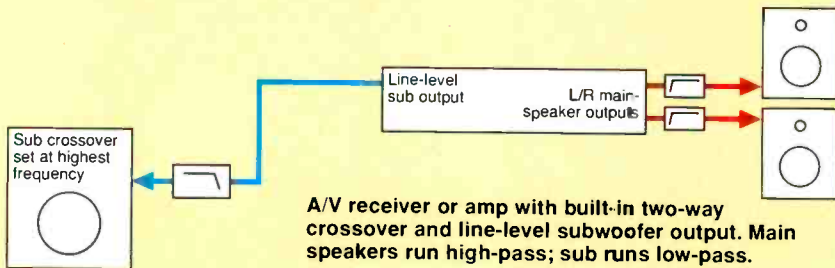
your main speakers drops like a stone below 120 Hz, a subwoofer crossover point of 80 Hz is probably too optimistic, though the vagaries of room acoustics and crossover characteristics can contradict every rule. Remember, the goal is solid, defined, natural bass with maximum smoothness through the difficult second and third octaves.

Now play a CD with a bottom end that extends below 40 Hz. The bass should be robust without sounding boomy. If things sound too lean, raise the sub's level. Then go back to the pop/jazz tracks and lower the crossover point a touch to reduce bloat. Don't be afraid to experiment with the phase switch, too (but remember which position yielded maximum level). Occasionally, the "wrong" setting will deliver the smoothest overall response.

By now you should be getting the picture. You may need to run through the whole process a few times to get the hang of it and develop an ear for deep bass. Carefully setting up a sub system is a bit like trying to squeeze the goat back out of the python, but the ultimate payoff is well worth the effort.

— D.K.

Common Powered-Subwoofer Connection Schemes



have to listen. If the subwoofer you have your eye on lacks a phase switch, you can do the same thing by physically swapping both sets of plus (+) and minus (-) leads at the sub's speaker-level inputs to invert its output.

BASS EQUALIZATION. Usually a non-adjustable "invisible" feature that's designed to extend response below the subwoofer system's natural limits.

DYNAMICS MANAGEMENT. Manufacturers use a variety of terms to describe what is essentially a compression circuit that limits the level of the input signal to prevent the woofer/amplifier from reaching gross levels of distortion no matter how hard the system is driven. The circuit is usually fixed and only rarely defeatable.

INFRASONIC FILTER. Often incorrectly called a "subsonic" filter, this is a high-pass filter at the subwoofer's input that prevents the system from reproducing extraneous signals below, say, 25 Hz or so. The idea is to reduce distortion and increase dynamic potential. It's a useful and surprisingly uncommon feature.

CLOSED-LOOP SERVO CONTROL. A feedback system in which an accelerometer mounted to the driver's voice coil monitors cone motion and compares it to the input signal. Any difference is presumed to be distortion and "subtracted" from the input signal.

REMOTE CONTROL. A growing (yet still small) number of subwoofers include wireless handsets that allow you to adjust the bass level from the comfort of your easy chair. If you're an inveterate twiddler I suppose this could be fun, but in my view it simply gives every passing yahoo the opportunity to screw up your carefully derived settings. My advice: If your sub includes a remote, hide it!

AUTO-ON. A common circuit found at all price levels, this feature puts the sub in "sleep" mode until an audio signal appears at its input, at which time the system is automatically powered up. Shut-down is typically delayed by 5 or 10 minutes after the signal disappears, just to be sure the movie (or musical work) is actually over.

Once you find the right subwoofer for your system, the fun begins. Even though locating and wiring it up can be quite a chore, your efforts will be amply rewarded with the kind of spine-tingling bass that you thought was possible only in concert halls and state-of-the-art movie theaters. □

RECORDABLE CD IS HERE!

BY KEN C. POHLMANN

Some new technologies burst upon the scene with great fanfare. The original compact disc, for example, made a tremendous splash. Although its success was certainly not assured (it was touch and go for the first year or so), there was no lack of publicity and hoopla.

On the other hand, the birth of some technologies is almost clandestine. Whether from corporate caution, poor market timing, or consumer ignorance, they often struggle to gain a toehold, then grow to maturity in relative secrecy. In the end, however, good technologies will usually flourish.

The CD-R (recordable) format is a textbook example of the stealthy road to success. Although write-once recordable CD's have been around since 1988, they are still a rarity to most audiophiles. Audio manufacturers have been slow to embrace the format, perhaps because many initially believed the future belonged to erasable digital technologies such as the DCC and MD.

As the audio world shunned it, though, the computer industry, with its voracious appetite for data storage, welcomed the CD-R. They saw the promised land in its 650-megabyte (MB) capacity and forgave its write-once limitation. In a computer world dominated by small-capacity, erasable, removable media (such as floppy disks) and large-capacity, erasable, nonremovable media (such as hard disks), the CD-R filled a unique need for permanent — yet portable — high-capacity data storage.

In fact, CD-R drives are now increasingly popular with computer enthusiasts, and some analysts predict that they will eventually supersede CD-ROM drives. That makes perfect sense: Today's CD-R drives do everything that CD-ROM drives do, while adding the distinct advantage of recordability. Even better, integrated CD-R hardware and software can now be had for relatively low cost. And though audio manufacturers have been slow to respond, they're now rolling out CD-R recorders for music lovers. Let's examine what recordable-CD technology is all about.

The Magic of CD-R

The format that is commonly known as CD-R (compact disc-recordable) is technically called CD-WO, which stands for compact disc-write once. True to its name, it's a "write-once" technology — the user's recording can be read indefinitely but can never be erased.

The CD-R format is extremely flexible, allowing

the recording of audio, video, text, multimedia, and virtually any other kind of data. This capability opens up a wide range of applications. For example, a computer's hard-disk drive can be backed up, and a permanent record created, by dumping its contents onto a CD-R. Audio archivists enamored of CD-R's longevity have lately been transferring studio master tapes to CD-R discs, with the bonus that CD-R's embedded with audio data can be played on any regular CD player. CD-R discs are also frequently used to store audio or other data prior to CD replication.

Though they look essentially the same, there are actually two distinct types of CD-R blanks. Both kinds can be played in CD-ROM or CD-audio players, depending on the data they contain. But audiophiles who purchase a consumer CD-R recorder to make music CD's will find that the two kinds of blanks are *not* interchangeable.

Data discs, which are intended for recording in computer CD-R drives, will hold any type of data, including audio. They're usually found in either 74-minute (about 650-megabyte) or 63-minute (about 550-MB) lengths and cost anywhere from \$7 to \$12 each. But they cannot be used to record in a CD-R audio recorder.

Audio-only CD-R blanks intended for consumer use are more expensive, typically around \$18 to \$25 each for a 63-minute disc. These discs cost more partly because the Home Recording Act calls for a tariff to be included to compensate the artists and record companies whose music will likely be recorded on them. And 63 minutes was set as the maximum recording time for audio-only discs to prevent users from digitally copying the full program on a 74-minute music CD.

The CD-R standard is defined in a reference volume called the Orange Book, Part II. Although CD-R discs containing audio data can be played on conventional (Red Book standard) CD players, the data is laid out a little differently on a CD-R than on conventional CD's in order to accommodate the recording function. The disc construction also differs.

Simply put, a CD-R recorder uses its laser to "burn" the data into a blank by way of a special organic dye that's embedded in the disc. Wherever the dye is heated by the laser, it causes a change in the disc's reflectivity that is interpreted by the playback laser as a data pit like those found on a regular CD.

As with regular CD's, CD-R discs are physically built on a polycarbonate substrate and contain a reflective layer and a protective top layer. Sandwiched



RECORDABLE CD IS HERE!

between a CD-R's substrate and reflective layer, however, is a recording layer consisting of the organic dye. Since the dye layer absorbs some light, a gold (rather than aluminum) reflective layer is needed to attain the necessary reflectivity. In addition, the gold layer is impervious to any corrosion that might be caused by the dye.

Also unlike regular CD's, CD-R discs are manufactured with a pre-grooved spiral track, which is used to guide the recording laser. To simplify recorder hardware design and insure disc compatibility with standard CD players, the track mimics a regular CD's 1.6-micron spacing, or "pitch." The track is 0.6 microns wide (as with a regular CD), and the track is physically modulated with a sinusoidal "wobble" at a frequency of 22.05 kHz. This helps the recorder keep the disc spinning at a constant linear velocity (CLV), a task normally accomplished on conventional discs by the pre-recorded data itself. On a CD-R disc, the perfect regularity of the groove modu-

lations acts as a reference that allows the recorder to check and correct the disc speed.

lars green against the gold reflective layer, is typically used in lower-power, low-writing-speed recorders. Phthalocyanine-based media have a yellow color and are often used in higher-power, higher-speed recorders. Both types of CD-R blanks have been extensively tested for longevity, and, if properly stored and used, they should last for decades. Like any CD, though, CD-R's are vulnerable to scratches, and some have an extra top layer of coating to protect against damage.

CD-R Configurations

Both stand-alone audio-only and computer-peripheral CD-R recorders are available today. Stand-alone audio machines are best described as a cross between a DAT recorder and a CD player; users can record discs and perform simple editing of tracks and subcode. These recorders operate in real time — for example, recording a 60-minute program takes 60 minutes. Of course, an hour-long live performance will always require an hour to record. But if the source being recorded already exists in digital form, such as a computer file, some computer CD-R drives can record the data at 2x, 4x, or 6x the real-time speed. On a 6x drive, for example, the data for a 60-minute digital audio recording fed from an appropriate high-speed source could be transferred to CD-R in just 10 minutes.

So far, only a few stand-alone CD-R audio recorders have been introduced, and most have been too expensive for anything but professional use. The \$2,000 Pioneer PDR-99 we reviewed in January and the recently announced PDR-05 (which is expected to sell for about \$1,700) are good examples of late-generation products aimed at consumers. They are easy to use and were clearly designed for people who would rather skip the mice and menus for a convenient, dedicated audio recorder. In addition, recorders such as these are built with high-quality A/D and D/A converters (in addition to facilities for direct digital input and output). As a result, the analog audio signals they record and play back are far superior to those passing through most computer sound cards.

Computer-peripheral CD-R recorders, on the other hand, interface with a host computer via a SCSI connection;

some recorders are packaged as half-height drives and may be either internal or external to the computer. The required application software is sometimes packaged with the drive, but it may have to be purchased separately (a variety of packages are available). The recorders operate in real time or faster, performing all processing required by the CD standard.

Depending on the software package used, various degrees of data manipulation are possible. For example, a software application may allow sophisticated editing of sound files prior to recording. In addition, some drives offer digital audio extraction, so that audio tracks can be read from a standard CD and copied to a hard drive as 16-bit, 44.1-kHz audio files. Furthermore, some CD-R drives offer "flash firmware" that allows easy upgrading of the drive's internal software.

As mentioned, computer CD-R drives operate from real-time (1x) speed up to 6x real-time speed, or even faster. High-speed recording requires discs approved for that purpose. Many systems can transfer data from either tape or a hard drive to the recorder and can produce audio CD's, CD-ROM's (including CD-ROM/XA and CD-i), and Photo CD's.

If you're looking to upgrade your computer to CD-R, you'll need more than the CD-R drive itself. Generally, for single-speed recording you'll need a large SCSI hard drive (1.2 gigabytes) with fast access (12 milliseconds seek time) and a transfer rate of at least 1.2 megabytes per second.

Any interruption in the data stream during recording a CD-R can render it unusable. Consequently, some CD-R recorders have a large cache memory onboard (perhaps 1 MB) to compensate for the data-stream interruptions that normally occur during hard-drive operation. As an alternative, CD-R manufacturers often recommend a hard drive with embedded servo tracks so that the automatic thermal recalibration employed by the typical hard drive will not interrupt the data stream. A hard drive with an unobtrusive recalibration procedure could also be used. Hard-disk drives that are suitable for CD-R often carry an "A/V" designation. Generally, data transfer is only tricky with writing speeds greater than 1x, and most software packages let you create an "image" of the entire recording on hard disk so that it can be easily copied to CD-R.

A CD-R computer upgrade can be



Pioneer's PDR-99 CD recorder (\$2,000)

even more complex because the various drives, interface cards, and software packages currently available are not always compatible. So while a computer CD-R drive is more versatile than a stand-alone CD-R recorder, it also requires a more computer-savvy user to set it up. Lately, however, CD-R manufacturers — including Sony, Creative Labs, Smart & Friendly, and others — have been working hard to simplify installation and operation of computer CD-R drives while lowering their prices. Some recent drives can be had for as little as \$1,000. The Hewlett-Packard SureStore CD-Writer 4020i, for example, is a complete hardware and software system with a list price of \$1,249 that sells in some stores for \$999. It includes a half-height Philips CDD 2000 recorder capable of 1× or 2× recording and 1×, 2×, and 4× reading. There's also a front-panel CD-audio output jack. Supplied software handily lets you import tracks from audio CD's, arrange them into a suitable compilation, then write the program to CD-R.

Included in the box is a self-configuring SCSI-2 interface card, cables, comprehensive software, and some blank discs. The system will record the CD-audio, CD-ROM, Video-CD, and CD-i formats. To use the 4020i CD-Writer, Hewlett-Packard recommends at least a 486/25-MHz processor, 4 MB of RAM, MS-DOS 6.0, and Windows 3.1. In addition, the PC's hard drive must have an average seek time of 20 milliseconds or less and a minimum transfer rate of 800 KB per second, and it must not perform thermal calibration during reading.

Recording with CD-R

Recording with either type of CD-R recorder is a fairly straightforward affair, but if you're used to recording on erasable tapes or storing files to rewritable floppy or hard disks, you'll have a few things to learn. To understand the differences better, it's helpful to know how a CD-R recorder organizes its data on the blank disc.

First, there are two areas written to the inner, lead-in portion of a CD-R disc that don't appear on a regular CD. The PMA, or Program Memory Area, contains data describing the recorded tracks, a temporary table of contents (TOC), and track-skip information. When the recording is completed, the PMA's contents are transferred to the permanent table of contents.

The second unique area is the PCA,



Hewlett-Packard's SureStore CD-Writer 4020i (\$1,249)

or Power Calibration Area, which allows the recorder to automatically make a test recording to determine the optimum laser power for the blank disc. User-recorded information, meanwhile, is held further out on the disc in the pregrooved program area, corresponding to the data area on a regular CD. The key thing to remember here is that a CD-R recording "session" is complete when a lead-in area (with TOC), user data, and lead-out area have all been written. Up to ninety-nine tracks can be recorded on a disc.

The CD-R standard allows for both single-session and multisession recording, with a session defined as a recording with lead-in, data, and lead-out areas. With single-session recording, sometimes called disc-at-once recording, a disc is recorded in its entirety, without pause. The recorder puts a table of contents in the regular lead-in portion of the disc, and that is followed by the data tracks and a lead-out area so that a conventional CD player can read the disc.

Alternatively, most recorders allow track-at-once recording. The tracks are recorded one at a time, and recording can be stopped after each track. Note, however, that a partially recorded disc is a work in progress; it can be played on the CD-R recorder, but it *cannot* be played back on a standard CD-audio player until the final TOC and lead-out areas are recorded, thereby completing the session.

Multisession recording, in contrast, allows more than one CD-R session, each with one or more tracks, to be placed on the same disc. Each session has its own lead-in TOC, data, and lead-out areas, and, unlike a partially recorded track-at-once recording, at least the first session can be read on any CD machine. Multisession recording carries a penalty, however. After the first session, each additional session requires an extra 13 MB of disc capacity to close it out, and because older CD-ROM drives, as well as all

CD-audio players, can read only the first session on a multisession disc, multisession recording is not typically used for CD-R audio discs. Multisession recording is quite useful, however, for creating Photo CD's and some CD-ROM's.

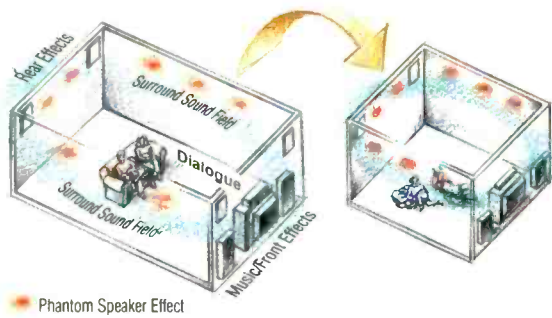
Of course, another thing to keep in mind is that editing on CD-R is a bit different from editing a traditional magnetic-tape recording. With magnetic tape, a false start or other unwanted material can be edited out of the final recording; you simply back the tape up to the spot you wish to record over, and the old material is replaced by new. Similarly, an old file on a hard drive or floppy disk can be erased and a new file written over it without any sacrifice in data capacity. But with CD-R, anything written to the disc is permanently ensconced on the disc. Fortunately, most CD-R recorders permit the user to mark an unwanted track and delete it from the TOC so that the CD-R player (and CD-audio players recognizing skip-ID flags) will disregard it.

Until manufacturers find ways to merge stand-alone audio and computer products, both types of CD-R recorders will be available. In the meantime, computer users should not be deterred from adding CD-R recorders to their multimedia computers. The opportunity to record and play back a variety of types of CD on your home computer (and stereo) is a revolution that has already begun.

On the other hand, many audiophiles, particularly those with no investment in a heavy-duty multimedia home computer, may wish to pass up computer CD-R drives and opt for a more familiar audio-only model. This type of machine offers user-friendliness in an impressive component-style package. And although such machines can't record CD-ROM's and other CD varieties, that limitation is of little concern if you're not a computer user. The chance to make high-quality audio CD's from analog or digital sources will be temptation enough.

Whichever way your interests take you, the exciting news is that CD-R technology is here today. Moreover, it is reliable, affordable, versatile, and, yes, absolutely worth the long wait. □

Some material in this article is drawn from Ken Pohlmann's Principles of Digital Audio (third edition), recently published by McGraw-Hill.



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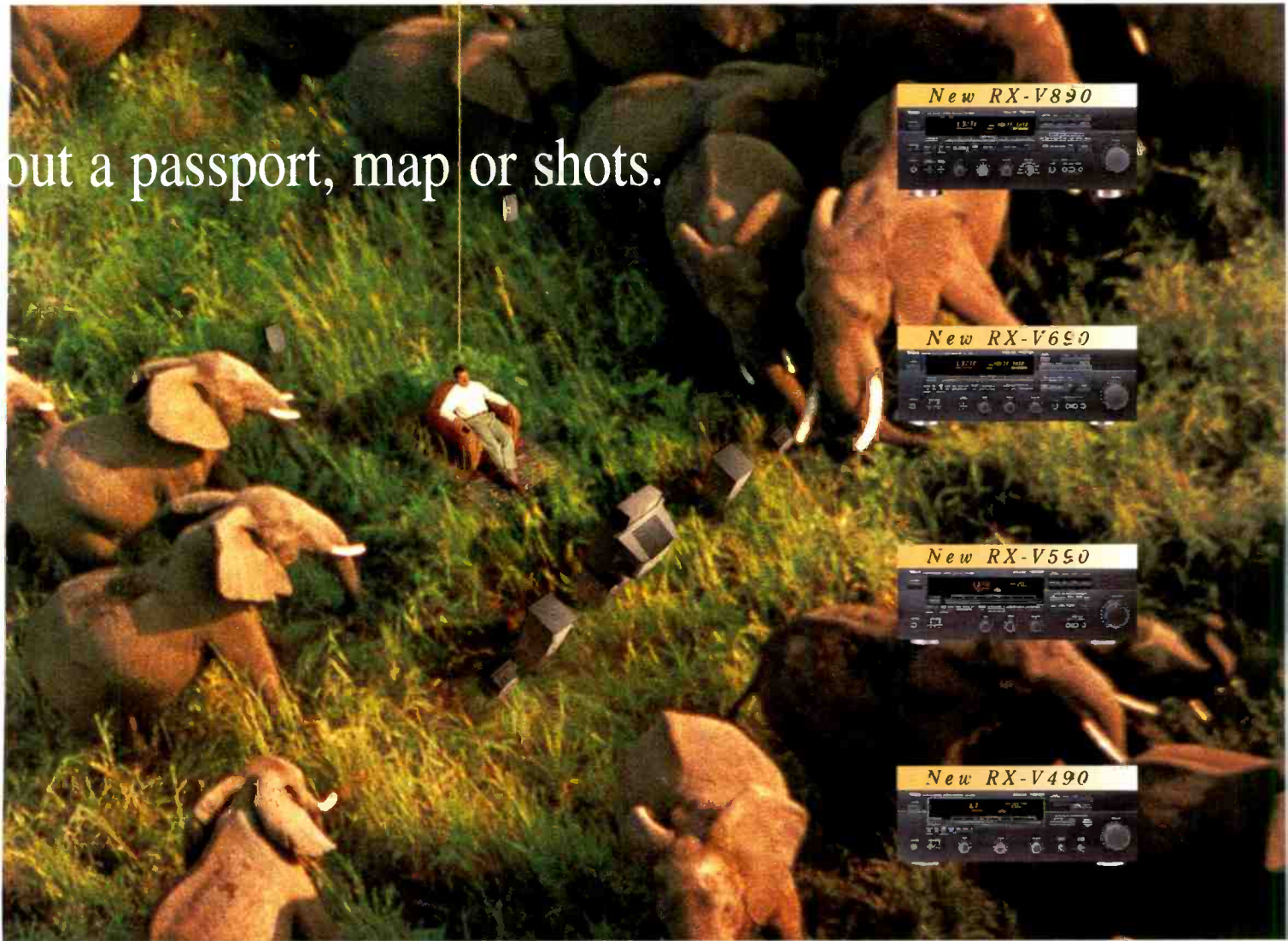
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Sonic Youth

Booking a chat with Eric Wong is no mean feat. On Tuesday there are guitar lessons. On Thursday there are piano studies. On Friday and into the weekend there is a church trip to Pennsylvania. In between, Eric enjoys tennis, mountain biking, and scuba diving. It's this kind of energy that also drove him to assemble a solid audio system, mostly through the classifieds.

And what's even more extraordinary about it all is that Eric is a 14-year-old high-school freshman whose system would be the envy of some 40-year-olds.

Eric lives in Fallston, Maryland, about twenty minutes north of Baltimore — or, as he points out, “just five minutes away from the guy in your November 1995 ‘Systems’ who has



‘The Shanty on the Creek.’” Eric’s interest in *STEREO REVIEW*, and audio in general, was spurred when he bought a copy of our June 1994 issue, enticed by the “New A/V Options” cover line and a back-page ad for Klipsch home theater loudspeakers. He began talking about speakers with his father, Nelson, and soon after — in an audio version of father-son bonding at the ballpark — his dad took him to

Gramophone in Lutherville, Maryland, the same hi-fi store where the elder Wong had started his own pursuit of audio twenty years ago.

Several more magazines and stores later, Eric was browsing through the classifieds of the *Baltimore Sun* when he spotted an ad for used speakers. Because the ad was alphabetized under “M” for Magneplan instead of “S” for speakers, he got a jump on other buyers and bagged a pair of Magneplanar MG-IIIa’s — which listed at \$1,995 when new in 1987 — for just \$800, using Christmas, birthday, and odd-job money he had saved up. Eric was on his way.

Taking over the family’s ground-floor den, he began to amass his used electronics: a Carver M-500t power amplifier (250 watts per channel), an Audio by Van Alstine Super FET 3+ preamplifier, a Sony CDP-505ESD CD player, and a Teac W-700R dual-well cassette deck. Retail list for those components would have been \$2,120. Eric landed them for \$720.

For hooking the system together, he bought Sound King 10-gauge speaker wire and Radio Shack interconnects with gold-plated plugs. “And I have Radio Shack fuses in my speakers,” he adds, “because I don’t think anyone makes gold-plated audiophile fuses!”



Eric also paid half the cost of the family’s 30-inch Toshiba TV, bought at a local warehouse store for \$700. His mother, Karen, paid the other half. “And my mom buys anything that organizes,” he points out, explaining that she footed the bills for the Archetype 5.0 component rack by Salamander Designs (\$200) and the Verona CD storage rack and halogen torchiere by Dana Lighting (\$40). “It has a nice look,” he says of the Dana rack/light, “and it matches the height of the Magneplanars.”

Those speakers are his pride and joy, and they helped him move away from an earlier fascination with Super Nintendo and Neo-Geo video-game systems to the thrills of home theater sound. But home theater with just two speakers?

“The imaging of the Magneplanars is absolutely incredible,” Eric responds. Two of his favorite examples: At the beginning of *Jurassic Park*, when Richard Attenborough pops the champagne bottle, “I swear it sounds like the cork lands on the floor of my room.” And in *True Lies*, when the villain Aziz riddles the bathroom stalls with bullets and the final casing hits the floor tiles, “it seems to drop right onto my fireplace mantel.”

Of course, Eric is already planning for true home theater. He has just bought a pair of Optimus PRO LX5 minispeakers for future surround use, and his wish list includes a KEF Reference 100 or a Polk CS350LS for the



PHOTOS BY DAVID W. LUCAS

center-channel speaker and a HSU Research HRSW 10V subwoofer. He's also looking for another power amp, possibly an Adcom GFA-5500 or an AudioSource AMP One. If money were no object, he would get a Sunfire amplifier (\$2,175), which pumps out 300 watts per channel, "because I can impress people if it knocks out the power in my house."

Eric listens to such bands as Bush,

Candlebox, Collective Soul, Stone Temple Pilots, and Nirvana, but when he wants to show off his system, he usually plays the effects passages included in two soundtrack compilations from Telarc: "The Great Fantasy Adventure Album" (80342) and "Star Tracks II" (80146). In the end, he admits, he's "more interested in electronics than music."

Sounds like we have a budding au-

dio engineer here. Well . . . no, says Eric, electronics is "just a hobby" for him. His imaginary picture of himself in the not-too-distant future looks more like this: cellular phone and laptop computer at the ready, "constantly on the run, going here and there — but that could be very stressful." We're pretty sure, however, that Eric Wong will be able to handle it.

—Ken Richardson

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SHLELF

awareness

Today's little shelf systems deliver big performance in tight spaces

Some good things do come in small packages, and nowhere is that more true than in bookshelf audio systems. Indeed, today's mini, midi, and micro systems are loaded with features, styling, and surprisingly big performance. Virtually anybody can find a home for one of these neat little systems, too. As a second (or third) setup for a den, bedroom, kitchen, or home office, a shelf system will let you listen to CD's, cassettes, and radio programs with far better sound than a typical table radio or boombox offers in not much more space. And if you're wary about running wires for a multi-

BY ROB SABIN

room installation, adding a shelf system or two may be an easier way to provide music away from your main listening room.

Movie buffs, meanwhile, will be pleased to know that Dolby Pro Logic decoders are appearing in more shelf systems, along with multichannel amplifiers to drive front, center, and surround speakers. That makes home-theater sound an option for that hi-fi VCR



CHRISTOPHER GOULD

and 20-inch TV in the bedroom — not to mention the summer cottage, college dorm room, cramped studio apartment, or other hard-to-fit abode.

Before you shop, it's best to decide where you're going to plant your new system. If the space is restricted in height, consider a "two-box" or component design that allows the electronics to be split into side-by-side stacks. Similarly, decide where the speakers will go so you'll know how large and heavy an enclosure your space can accommodate.

Most bookshelf systems come with an AM/FM tuner, a dual- or single-well cassette deck, and a CD player. For CD's you can choose from single-

disc players, traditional changers, and high-capacity mega-changers. In the preamp/amplifier section, look for extras like high power ratings and digital signal processing (DSP) modes, which can help broaden the sound field from small speakers.

Two caveats: First, as with any sound system, loudspeaker quality is critical, and speakers are often the weakest link in the shelf-system chain. Thoroughly audition any system before you buy it, preferably with a few of your own favorite CD's. If you find an electronics package you really like, you can consider replacing the speakers with a pair of the many excellent small speakers on the market, provid-

ed the system delivers enough power to drive them properly.

and speaking of power, be wary of power ratings for shelf systems. Unfortunately, manufacturers don't always apply the same standards they use for full-size components, so it's not unusual to find a shelf system boasting an artificially high power output, typically signaled by a high distortion figure or a limited bandwidth specification. The bottom line here is the same: Crank it up before you buy, and make sure that the system packs enough punch to satisfy your needs.

Aiwa ▶

You can rock around the clock with the fifty-disc changer in Aiwa's NSX-V150M mini system, which lets you create a CD reference file to catalog the discs. Other features include a 50-watt-per-channel amplifier, a graphic equalizer, a nine-band spectrum analyzer, an AM/FM tuner, a dual-transport cassette deck, and an automatic vocal fader and digital echo to delight the karaoke fiend lurking in some of us. The three-way speakers are magnetically shielded and stand 13¼ inches tall. Price: \$900.



▲ Denon

Denon's D-C1 micro system slips into small spaces with its overall dimensions of 19 x 10½ x 10 inches (with speakers). It has a six-CD changer with music-calendar display and twenty-track program memory, a full-logic autoreverse cassette deck, and an AM/FM tuner with sleep timer and timer recording modes. The integrated amplifier is rated at 15 watts per channel and includes a five-band graphic equalizer. The speakers are two-way bass-reflex designs. Price: \$499.

▼ Optimus

The seven-CD changer in the Optimus System 731 micro system from Radio Shack means lots of music in a little stack measuring just 13 inches tall. All seven CD's can be played sequentially or randomly. A digital AM/FM tuner with twenty-four presets, a single-well cassette deck with synchro dubbing from CD, a sleep timer, and a remote control are all included, as are an extended-bass circuit and three preset EQ settings. The two-way speakers have 4-inch woofers. Price: \$350.





◀ JVC

A three-CD carousel changer in JVC's DC-ME3 mini system lets you spin one disc while changing the other two and provides twenty-track programming as well as random and continuous play. The stereo amplifier, rated at 25 watts per channel into 8 ohms from 80 Hz to 15 kHz with 0.9 percent distortion, offers three preset EQ curves and a bass-extension circuit. The three-way bass-reflex speakers pack a 5 $\frac{1}{8}$ -inch woofer and stand 15 $\frac{3}{8}$ inches tall. A full-function remote is included. Price: \$470.

Pioneer ▶

The ability to play both CD's and 12-inch laserdiscs makes Pioneer's CCS-LV1 versatile, as does the button that attenuates vocals to turn virtually any disc into karaoke software. The 35-watt-per-channel amp (rated into 6 ohms from 70 Hz to 20 kHz with 0.9 percent distortion) drives dual-ported speakers, each featuring an 8-inch side-firing woofer. An AM/FM tuner with twenty-four presets and a double autoreverse cassette deck are part of the package. Price: \$1,220.



◀ Fisher

The Fisher DCS-5060 cooks up an endless feast of music. Its Studio 60 CD changer holds up to sixty CD's and lets you organize them into alphabetical categories and subcategories. There's also a hefty power amplifier (50 watts per channel into 8 ohms from 40 Hz to 20 kHz with 0.9 percent distortion). Other features include thirty-six AM/FM presets, an autoreverse cassette deck, and a full-function wireless remote. Price: \$650.

Panasonic ▶

Panasonic's best mini system, the SC-CH92, offers high power and plenty of options to tailor the sound. Its amplifier delivers 80 watts per channel into 6 ohms from 40 Hz to 20 kHz with 0.9 percent distortion. A seven-band spectrum analyzer lets you view the effects of five preset EQ modes and a karaoke mode that mutes vocals. There are also three sound-field modes. Among the system's other features are a three-CD changer, a double autoreverse cassette deck with three edit modes for dubbing CD's, an AM/FM tuner, and three-way speakers bolstered by Panasonic's V-Bass circuitry. Price: \$600.





◀ Goldstar

As either a wall-hanging or tabletop music center, the Goldstar F-191 is a stylish alternative to conventional shelf systems. It comes in charcoal gray, green, or red, measures 31 x 14½ x 5½ inches overall, and has two-way speakers that can be separated from the main unit. A full-function handheld remote is provided, as are four factory-set EQ curves. Other features include motorized doors to access the CD player and single-well, full-logic cassette deck and an AM/FM tuner with thirty presets. Price: \$699.

Magnavox ▶

A seven-disc elevator-style CD changer with fifty-track programmability is the soul of the Magnavox FW620C37 mini system. Also on hand is a double cassette deck with autoreverse and special edit functions for dubbing CD's to tape. The AM/FM tuner features thirty presets. Rated amplifier power is 32 watts per channel. Four DSP modes, a bass-boost circuit, and a remote control are provided. Overall dimensions are 26 x 12 x 12 inches. Price: \$480.



◀ Bose

The Bose Lifestyle 20 music system uses new driver technology and spiral-shaped ports to deliver big sound from its swiveling, 4½-inch-tall Jewel Cube speakers. An Acoustimass bass module (not shown) fills in the bottom, while the heart of the system is the low-profile 15½-inch-wide Music Center with a six-disc magazine CD changer and an AM/FM radio. The Lifestyle 20 comes with an RF remote control said to operate from up to 65 feet away. Price: \$2,500.

Sharp ▶

Virtual Surround Processing in Sharp's CD-C777 is said to create a larger sound field by bouncing sound off the listening-room walls. Also featured is a three-disc CD carousel changer with thirty-two-track programmability, a full-logic double cassette deck, a 40-watt-per-channel amplifier, four factory EQ modes, an AM/FM tuner with forty station presets, three-way bass-reflex speakers standing 12½ inches tall, and a clock timer. Price: \$450.



Yamaha ▶

Yamaha's expertise in soundfield processing appears in the CC-75 component mini system as Digital Super Surround, which offers five modes: Hall, Disco, Church, Jazz Club, and Relax (intended for New Age music). The system also boasts a carousel CD changer that lets you replace two CD's while playing a third and a dual cassette deck with autoreverse. Active Servo Technology enhances bass from the 13-inch-tall three-way speakers and 55-watt-per-channel stereo amp. Price: \$799.



◀ Kenwood

Home theater is a Lilliputian affair with Kenwood's UD-753 bookshelf system. It features Dolby Pro Logic, multichannel amplification, and separate main, center, and surround speakers. The amp is rated to deliver 80 watts rms to each of the mains, 10 watts to the center, and 3 watts to each surround. A subwoofer preamp output accommodates a powered sub. The 18-inch-high main speakers and the center speaker are magnetically shielded. A six-CD changer and an AM/FM tuner are included. Price: \$1,000.



Sony ▶

Electrostatic tweeters perched atop the main speakers, each fed by its own amplifier, are found in Sony's MHC-C9EXPKG shelf system. There's also Dolby Pro Logic decoding and extra amp channels to drive the rest of the 16-inch-tall main speakers as well as the center and surrounds included in the package. The sound may be tailored by five DSP modes and a seven-band EQ. Tunes are generated by a five-CD changer, an AM/FM tuner, and a dual cassette deck. Price: \$2,100.



◀ Technics

The power amplifier in Technics' SC-CH737 minicomponent system features analog meters reminiscent of pro gear. Rated at 60 watts per channel, the amp drives a pair of 16 $\frac{3}{8}$ -inch-tall speakers featuring a double-cavity design to optimize bass. There's also a three-disc CD changer, a dual autoreverse cassette deck, an AM/FM tuner, and a timer that lets you fall asleep to one source at one volume level and wake up to another at a different volume. Price: \$999.



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REPORT FROM

JAPAN

BY BRYAN HARRELL

TOKYO — From a whole new generation of CD's and videodiscs to flat plasma video displays, last fall's Japan Audio Fair in Tokyo and Japan Electronics Show in Osaka offered a promising glimpse of the not-so-distant future of home entertainment.

Along with the current crop of Dolby AC-3 audio gear for surround-sound aficionados and a new wave of digital camcorders, there were prototypes galore at both shows to demonstrate technologies looming just over the horizon. Much of the excitement focused on the digital videodisc (DVD) format, now expected to hit the States late this year.

There were also prototypes for a new generation of large-screen color plasma displays, so thin they can be hung on a wall like a painting. Large color LCD panel displays were shown as well, and while prices of both these and the plasma screens are expected to be high initially, one or the other might eventually make the standard color picture tube obsolete. Widescreen HDTV prototypes were also in evidence at the mammoth Electronics Show. Beyond these items, goodies on display at both events included auto navigation systems and a super-miniature voice recorder.

DAWN OF THE DVD

If you've been following the development of DVD, you probably know that two camps initially faced off with incompatible formats. Fortunately, a war was averted when Toshiba/Time Warner and Sony/Philips agreed to merge their SD (Super Density) and MMCD (Multimedia Compact Disc) technologies into one system, which will go by the name DVD.

Though the consolidated specifications were not yet final at the time of the Audio Fair and Electronics Show, a group of manufacturers supporting the Toshiba SD proposal set up shop at both venues to give presentations on the remarkable potential afforded by this technology. Most of what was presented made it into the new DVD standard.

In the past ten years, home audio and video components have merged into what are today's A/V systems. DVD should now take the consolidation even further, merging audio, video, and computer applications in a

single format. The SD manufacturers proposed an array of discs with various capacities in 3-inch and 5-inch sizes (though the 3-inch discs are not expected to turn up in the U.S.). In the 5-inch family are single- and double-sided discs, the same size and appearance as ordinary CD's, with each side using either a single- or dual-layer design. The dual-layer discs actually store two separate data tracks on the same side, and the DVD player's laser can access one or the other.



A prototype of Sony's flat plasma-display TV, the Plasmatron

The possibilities here are mind-boggling. Audiophiles, for example, might enjoy a small 3-inch disc that could hold 7.5 times the data of an ordinary CD, providing two levels of performance: the current standard of 16-bit digital audio at 48-kHz sampling for 200 minutes of stereo sound, or high-resolution 24-bit digital audio at a 96-kHz sampling rate, for 70 min-

utes of stereo sound. Dynamic range for the high-performance disc is pegged at a whopping 145.8 dB, and its wide-band frequency response runs up to 48 kHz, well beyond the range of human hearing.

The 5-inch discs are suitable for better-than-laser-disc-quality movies as well as music recordings or high-density CD-ROM applications. A single-sided, single-layer disc with a data capacity of 4.7 gigabytes (GB) can store 135 minutes of MPEG-2 compressed video, along with a six-channel digital soundtrack (using Dolby's AC-3 or a similar scheme) and up to eight subchannels for dialogue in as many languages. It'll also allow selectable subtitles in up to thirty-two different languages and multi-aspect ratios for both conventional 4:3 TV's and 16:9 widescreen sets.

Dual-layer discs (with 8.5 GB capacity) could be used for longer movies or special programming, such as adding commentary from a film's director. A double-sided, single-layer disc could be used to store, say, a movie and its sequel.

What's more, DVD players will also play today's music CD's. Several companies showed dual-use pickups that allow CD's and the proposed DVD's to be played back by the same unit.

Hardware and software manufacturers have shown interest in many of these applications, but the capabilities of the first players remain to be seen. One thing we know, however, is that they won't have a recording function. Write-once and rewritable discs are in the standard, but they will be a longer time coming.



A prototype of a DVD player from JVC

As for which manufacturers will be first to offer players, take your pick. Many of the big names have been tinkering with the technology and displayed prototypes in Osaka. JVC, for example, showed a DVD player along with a write-once audio CD and CD-ROM recorder. Matsushita (Panasonic, Technics, and Quasar in the U.S.) showed a DVD player with infrared, red, and blue laser pickups. The SD system calls for a red laser, but the blue laser (with its super-narrow beam) will eventually allow even greater storage capacity than first-generation DVD.

Pioneer displayed a DVD player that used a blue

laser to provide 15-GB-per-side capacity, although "practical" capacity was rated at only 10 GB. But that's still twice the 4.7-GB-per-side capacity using a red laser. Also from Pioneer was a write-once recorder that boasted 3.8 GB per side. The company claimed a maximum 10-megabits-per-second operation rate and media cost comparable to CD-R, making the system "ideal for SD-ROM authoring."

Mitsubishi displayed its DVD player for single-sided, single-layer discs, as well as a twin laser pickup for DVD and CD playback. Sanyo showed a dual DVD/CD pickup mechanism, which may be offered to other manufacturers on an OEM basis. Finally, Philips showed its own DVD player in the MMCD format that it co-developed with Sony.



Pioneer's prototype DVD recorder

DIGITAL CAMCORDERS

Several manufacturers also demonstrated digital camcorders, which recently became available in the U.S. from Sony and Panasonic. This new format uses a 5:1 compression scheme (unrelated to

MPEG compression) and a tape that is a little smaller than a DAT. At present, the longest blank tape is only 60 minutes and retails for \$11 in Japan. With 16-bit recording at a 48-kHz sampling rate, sound quality is said to be on a par with that of DAT.

JVC showed what it says is the world's smallest and lightest digital camcorder, the GR-DV1 (\$2,200), weighing only 1 pound and measuring 1.7 x 3.5 x 5.8 inches, about the size of the average 35-mm camera.

From Matsushita came the digital NV-DJ1 (\$2,750), with a three-CCD imaging element, and the NV-DR1 (\$2,200) sporting a color LCD panel on the back. Sharp, meanwhile, showed the VL-DH5000 (\$3,800), a digital version of its famous Viewcam.

COLOR PLASMA DISPLAYS

Unlike a conventional CRT display or even an LCD, plasma displays use pockets of hot, glowing gas to emit an image. This new type of video monitor offers a number of distinct advantages, most notably extremely thin dimensions that could allow the monitor to be hung on a wall. In-wall installation, however, requires provisions for venting the heat generated by the unit (said to be equivalent to that of a 300-watt light bulb for a 40-inch screen). Plasma displays are also perfectly flat, and theoretically do not generate any of the image distortion that CRT's are subject to.

None of the manufacturers are offering plasma displays for sale as yet, but among the prototypes I saw, Sony's Plasmatron delivered far better image quality than the others. Of course, these prototypes are no doubt tweaked to look good with specifically chosen playback material, so there's no telling how the final products will do in real-world settings. Sony plans to release a series of 20- to 50-inch models, though no date was given for the introduction. Matsushita

demonstrated 26-inch and 40-inch plasma displays; the 26-inch model could go to stores in Japan later this year. Pioneer also showed a 40-inch prototype, which is expected to go into production by the beginning of 1997. None of these manufacturers would discuss prices, but the speculation is that the first sets will cost \$3,000 to \$4,000.

Virtually all of the plasma-display prototypes were in the wide-aspect 16:9 ratio, which looks poised to become the new TV standard in Japan in the coming years. But I did see at least two plasma screens in the conventional 4:3 aspect ratio, including a 21-inch version from Fujitsu and a 33-inch model by NEC.

LCD-BASED MONITORS

In the flat-screen category, plasma wasn't the only game in town. Sharp displayed an impressive 28-inch prototype VGA monitor using thin-film transistors. Also shown were Sharp's 10-inch and 14-inch LCD TV's (which are already on the market in Japan) and its wide-format XV-R43 (\$3,980) and XV-R36 (\$3,480) LCD projection monitors, which offered surprisingly good image quality.

Sony displayed the new KL-37HW1 LCD projection monitor (\$3,300), featuring a cabinet depth of only 15.3 inches, the same as its current 14-inch TV. Three thin-film transistor LCD panels are used to create the image.

AC-3 HARDWARE

While you'll have to wait for DVD and plasma TV's, Dolby AC-3 is here now. Hardware for playing laserdiscs encoded with AC-3 soundtracks was shown around the floor at the Japan Audio Fair as well as in a special dedicated display.

From Pioneer there were several laserdisc players featuring the special AC-3 output, including the CLD-R4N (\$548), CLD-HF7G (\$1,100), and CLD-HF9G (\$1,700). For playing back that AC-3 signal, the company showed the SP-D07 processor (\$1,200) and the new VSX-09 amplifier (\$1,700).

Yamaha showed its new DSP-A3090 amplifier (\$2,480), while Denon exhibited prototypes of its just-released AVP-A1N preamp (\$4,000) and POA-T2N and POA-T3N power amps (\$1,500 and \$2,000). The

preamp features THX certification as well as AC-3 and Dolby Pro Logic decoding.

... AND OTHER COOL STUFF

If you were looking for something a little more exotic, there was a variety of unusual gadgets and other components on display in Japan. Sony showed the new NT-2 digital recorder (\$1,280), which uses postage-stamp-size tapes. Measuring just 0.9 x 4.4 x 2.4 inches and weighing 5.5 ounces, the NT-2 is advertised for voice recording yet offers remarkably good stereo recording capability.

Sony also displayed the new compact TCD-D8 portable DAT recorder (\$770) and the matching SBM-1 outboard A/D converter (\$400). The SBM-1 allows 20-bit processing using Sony's Super Bit Mapping technology. New MiniDisc products for nonaudio applications included the MDH-10 DataFile portable (\$648). This record/playback unit can be used to store data for virtually all PC's and Macs, or it can be connected to a scanner, allowing users to scan and store up to 1,000 letter-size pages on a special 140 megabyte MiniDisc (MMD-140, \$25). The matching DPP-M1 printer (\$760) provides direct printout. Shown alongside this system was the Picture MD, which can hold 200 still shots on a disc.

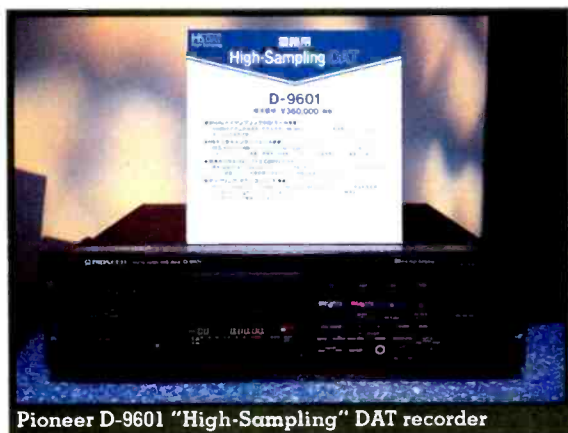
NEC displayed a prototype 1-gigabit D-RAM chip, perhaps bringing the dream of solid-state audio software just a little bit closer to reality.

Sony's PowerWIDE Trinitron Multimedia TV is a 16:9 high-definition TV that can be hooked up to a multimedia computer. The 32-inch KV-32PW1 (\$3,300) and 28-inch KV-28PW1 (\$2,500) versions are now available in Japan.

Pioneer displayed two DAT decks that sample at 96 kHz, twice the normal DAT rate of 48 kHz. The D-9601 (\$3,600), designed for professional use, features a High-Sampling (HS) digital interface, double-speed copying, and a converter for lower sampling rates. Also available is the D-07A (\$1,600).

JVC exhibited a prototype D-VHS deck, about three times taller than a typical VCR, that performed digital video recording (without compression) on S-VHS tapes using the same 62 mm head drum as normal VHS. Unlike the D-VHS data recorders JVC announced in the U.S. last year, this deck had on-board A/D and D/A converters for compatibility with analog sources and monitors. There were no formal plans for its introduction.

Finally, if you plan on leaving your house once in a while, there were a handful of car navigation systems in Osaka. Nav systems garnered a lot of exposure at last year's Electronics Show, but the displays shrunk this year after a strong market failed to materialize in Japan. Nonetheless, Alpine had an exhibit promoting more new mobile electronics configurations, including a voice interface for controlling different Alpine systems, a computer that links up with your home or office via satellite, a car-mounted DVD changer, and even in-car interactive displays for videophone and other images. How's that for taking your show on the road? □

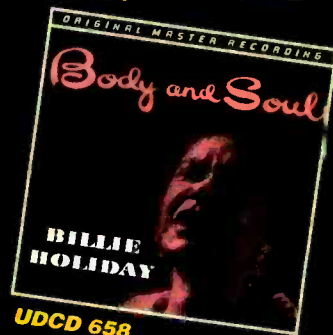
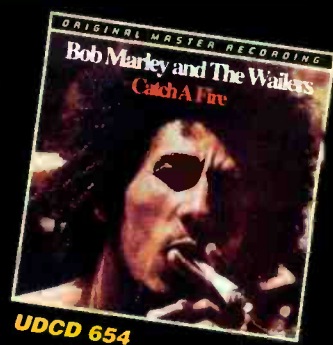


Pioneer D-9601 "High-Sampling" DAT recorder

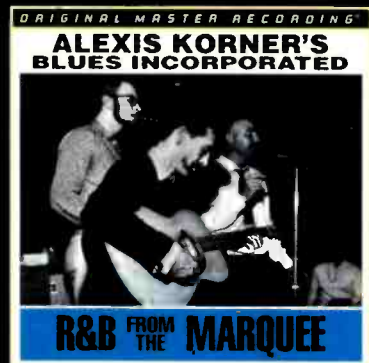
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BEST OF THE MONTH

STEREO REVIEW'S
CRITICS CHOOSE THE OUTSTANDING
CURRENT RELEASES

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Bruce Springsteen Hits the Road

In the booklet for "The Ghost of Tom Joad," Bruce Springsteen cites John Ford's 1940 film *The Grapes of Wrath* but mentions only in passing John Steinbeck's classic American novel that was the basis for Ford's great work. With Springsteen, that is no simple oversight. The cinematic sweep and isolat-

ed scenes of the story — the close-up anguish of the men who live the not-so-quiet lives of desperation — are what interest him, rather than the impact of the saga as a whole.

In the movie and the book, the Joads are Okie farmers of the 1930's who move west to get work as migrant fruit-pickers

but who find only oppression, disillusion, and death. Springsteen, of course, has always been concerned with proletarian stories, with themes of class struggle and economic inequity (subjects that must be increasingly more difficult for him to wrestle with given his own success). But another ghost hovers over the music here: The album is essentially the Boss's ode to Woody Guthrie, the folk singer who traveled some of the same highways as the fictional Joads.

Springsteen's map of the U.S. shows the paths of twelve disenfranchised characters walking the backroads and pot-holed streets of America. A Vietnam vet labors in the blast furnaces of *Youngstown*, questioning his faith in his country and his contribution to building the weapons of war. A mild-mannered shoe salesman meets a woman who sets him on a path of lawlessness and murder (*Highway 29*). A family man turns into an itinerant drifter, lying in a makeshift bed and pondering the taking of another life to preserve his own (*The New Timer*). Many of the protagonists have direct links to Tom Joad and the profound poverty of the Depression — the ill-fated, fruit-picking brothers of *Sinaloa Cowboys*, for example, or the men of the title song, who sleep in cardboard boxes with their eyes open, fearing the rip of a knife blade in the night.

While the album contains some of the most somber (and nearly whisper-quiet) lyrics Springsteen has ever put to music, much of the writing is strikingly poetic. Particularly effective are the scene-setting stanzas of *Straight Time*, a peephole portrait of an ex-con with a new wife and babies who knows it's only a matter of months before he goes "tripping 'cross that thin line."

The album loses momentum at times, and the decision to deliver the entire program in a slightly updated but still minimal harmonica-and-acoustic-guitar folk style risks dullness. Unlike Springsteen's timely breakthrough *Streets of Philadelphia*, the music never really moves into the Nineties, emotionally or stylistically; the characters remain hitchhikers in history, their calloused thumbs frozen in time. Then again, given the themes here, perhaps that was the point. And, flaws notwithstanding, "The Ghost of Tom Joad" stands as a deeply affecting narrative about men and women driven to desperate deeds in desperate times.

Alanna Nash

BRUCE SPRINGSTEEN: The Ghost of Tom Joad.

The Ghost of Tom Joad; Straight Time; Highway 29; Youngstown; Sinaloa Cowboys; The Line; Balboa Park; Dry Lightning; The New Timer; Across the Border; Galveston Bay; My Best Was Never Good Enough.
COLUMBIA 67484 (50 min).

BEST OF THE MONTH

Roberto Alagna: Have We Found The Tenor?

When Beniamino Gigli won a vocal contest in Parma back in 1914, the judges proclaimed, "We have finally found The Tenor!" Dare I say that here? Surely Roberto Alagna, age 32, already acclaimed at Covent Garden, will be tested further — his Metropolitan Opera debut is impending — but his first aria recital, recently released on EMI, reveals a tenor of extraordinary gifts, fine taste, and mature artistry.

A native of France of Sicilian ancestry, Alagna received training in both France and Italy — a blessing in itself, for it earmarks the singer for success in the operatic repertoires of both countries. He manages to combine French elegance with Italian gusto. The CD emphasizes this dual heritage by sequencing the seventeen selections so that Italian and French arias alternate. Further praise is due for the in-



SHEILA ROCK/EMI

Tenor Roberto Alagna

clusion of rarely heard arias from Rossini's *Guillaume Tell*, Henri Rabaud's *Marouf*, and Gounod's *Polyeucte* and the less familiar of the tenor arias from Gounod's *Roméo et Juliette*.

Alagna first came into public view as a winner of the 1988 Pavarotti Competition and has not been able to avoid the needless comparison with his "mentor." I don't find the similarities particularly striking beyond the obvious fact that both are lyric tenors of exceptional ability.

Alagna's timbre is basically darker than Pavarotti's, and his high notes, while secure and impressive, are not as shining and penetrating as those his predecessor regaled us with when *he* was 32. At the same time, the artistry Alagna displays in this recital can stand comparison with that of any tenor before the public today. The *Tell* aria shows a heroic ring (which he may not wish to cultivate further at this time), the excerpt from Donizetti's *Don Pasquale* displays youthful ardor and a melting tone, "*M'appari*" from Flotow's *Martha* is spun out with a long-breathed legato, and the aria from Cilèa's *L'Arlesiana* offers exquisite modulations of tone. His *piano* singing is nicely sustained, and he knows how to display emotion without excesses. There are a few instances where the pitch goes slightly sharp — but Jussi Bjöerling had the same tendency.

Though conductor Richard Armstrong tends to push tempos on occasion, the orchestral support is fine, and so is the sound. Bravo!
George Jellinek

ROBERTO ALAGNA: Arias.

Roberto Alagna (tenor); London Philharmonic, Richard Armstrong cond. EMI 55477 (61 min).

S.F. Seals' Garage Folk

Just when you thought there weren't any new ways to make an irresistible pop album, S.F. Seals comes along and finds one. The Seals are a loose-knit group led by the singer/guitarist/writer Barbara Manning, who has long been a darling on the indie circuit, having bounced between electric-band and solo-acoustic formats. She's canny enough to have covered songs by such cult heroes as John Cale, Peter Dinklage, and Badfinger and eccentric enough to have devoted an entire EP to songs about baseball.

"Truth Walks in Sleepy Shadows" is the catchiest and most straightforward record Manning has ever made. The sound might be described as garage-folk; the scruffy arrangements show traces of *Louie Louie* consciousness, but the band



SPENCER LUDWIG/MATADOR

S.F. Seals: gently into the night

is working to enhance the vocals instead of drowning them out, no doubt realizing how grabbing and unguarded Manning's voice is. And the album has the stylistic reach of a good late-Sixties effort, including period covers of the Pretty Things' art-pop gem *S.F. Sorrow Is Born* and Cale's brooding, mysterious *Soul of Patrick Lee* (which is given the best backward guitar solo since the one in R.E.M.'s *What's the Frequency, Kenneth*). Of the originals, *Pulp* offers this month's most clever statement of romantic longing ("I'd rather be the drum between your legs / So you could hit on me"), while *Ladies of the Sea* is about as close as a 3-minute pop song gets to flat-out erotica.

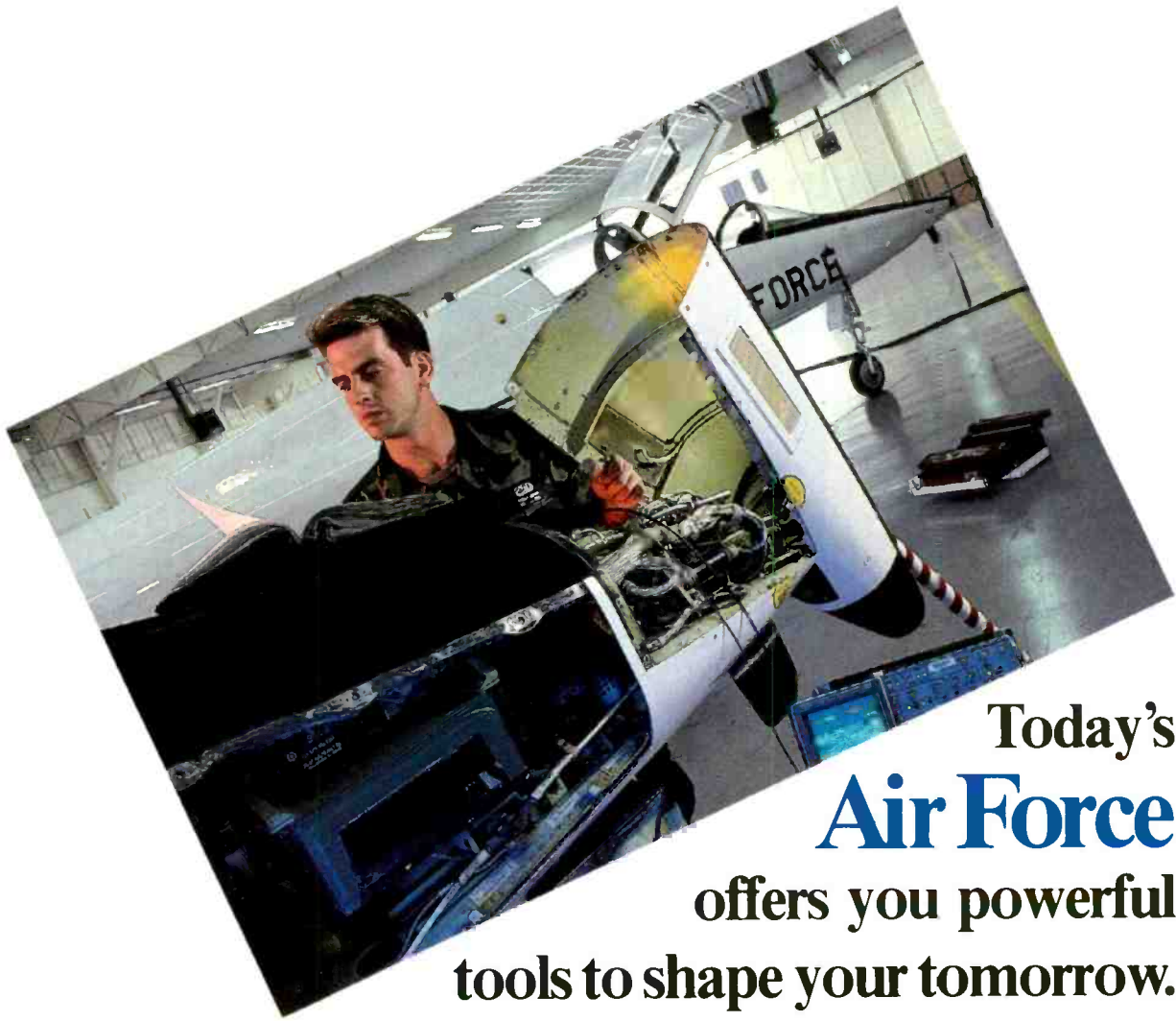
Intentionally or not, the album also has echoes of the Beatles' "Revolver." *Kid's Pirate Ship* is its *Yellow Submarine*, a head trip disguised as a children's song, and *Bold Letters* is its *Here, There, and Everywhere*, a haunting love ballad complete with cello. Both albums feature psychedelic finales, too, though the Beatles' *Tomorrow Never Knows* is an abrupt awakening, the Seals' *Stellar Lullabye* a brief instrumental that gently carries you off into the night.

Put simply, "Truth Walks in Sleepy Shadows" is so smart, so likable, and so downright charming that I'm tempted to ask it out to dinner.
Brett Milano

S.F. SEALS:

Truth Walks in Sleepy Shadows.

S.F. Sorrow; *Ladies of the Sea*: Ipecac; *Locked Out*; *Bold Letters*; *Flashback Caruso*: Pulp; *Soul of Patrick Lee*; *Kid's Pirate Ship*: *How Did You Know?*; *Stellar Lullabye*. MATADOR 0162 (34 min).



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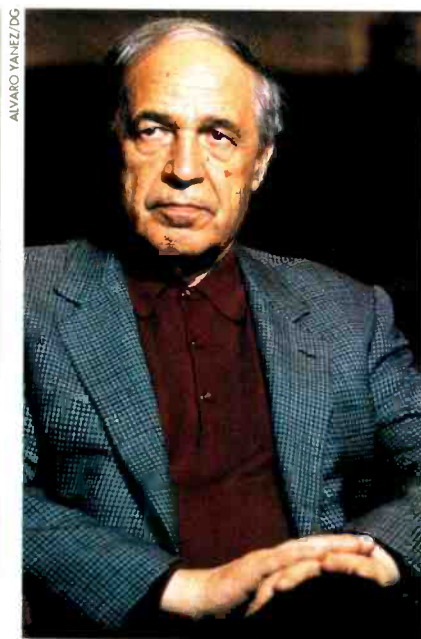
BEST OF THE MONTH

Awesome Messiaen from Boulez

You don't have to subscribe to Olivier Messiaen's brand of Catholic mysticism or understand in depth his use of Hindu rhythmic patterns and bird song to respond to his music. It calls attention to itself in no uncertain terms, much like the late works of Scriabin, whose theosophical underpinning was equally dispensable for the listener. So it is with the three Messiaen blockbusters on conductor Pierre Boulez's new Deutsche Grammophon CD. The stunning performances by the Cleveland Orchestra were recorded with blindingly brilliant sonics in the near-ideal acoustic surround of Cleveland's Masonic Auditorium.

Completed in 1960, *Chronochromie* is a study in time and color comprising seven sections: Introduction, Strophe I, Antistrophe I, Strophe II, Antistrophe II, Epode, and Coda. The first and last sections are veritable explosions of sound and color. The bird-song element is very evident in the antistrophes and especially in the solo string scoring of the Epode. For me the most fascinating movement is Antistrophe II, with its combination of mallet percussion, Hispanic rhythm, and chorale form.

Et exspecto resurrectionem mortuorum dates from 1964, and its five movements



ALVARO YANEZ/DG

Conductor Pierre Boulez

bearing apocalyptic Biblical quotations represent Messiaen at his most flamboyantly mystical. The scoring is for woodwinds, brass, and metal percussion — “heavy metal” in the most potent sense of

the phrase! The opening pages are darkly menacing, but the music becomes ever more dazzling with its bells, gongs, and brass; the avian element manifests itself in the massed woodwinds of the third movement. Massed metal percussion and brass are prominent in the fourth section, depicting the resurrection of the dead, and the work ends in a visionary apotheosis.

The 9-minute *La Ville d'en Haut* from 1987 adds piano to the previous panoply of woodwinds, brass, and percussion and evokes the City of God envisioned in the book of *Revelations* and kindred Biblical passages. Again we have bird calls juxtaposed with more awesome sonic pictures. The impact of this CD is a bit overwhelming when the whole is heard in one sitting. Messiaen's description of the music as being “for large spaces: churches, cathedrals, and even out of doors and among high mountains” is perfectly apt. You may love this music or loathe it, but certainly it cannot be ignored. The better your playback equipment, the more you will appreciate what Boulez, the Clevelanders, and Deutsche Grammophon's production team have wrought here.

David Hall

MESSIAEN:

Chronochromie; La Ville d'en Haut; Et exspecto resurrectionem mortuorum. Cleveland Orchestra, Pierre Boulez cond. DEUTSCHE GRAMMOPHON 445 827 (58 min).

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BLACK OAK ARKANSAS:

High on the Hog.

RHINO 72222. The fifth album (1973) by the Southern rockers, featuring their hit version of LaVerne Baker's *Jim Dandy*.

GIGI (original-soundtrack recording).

TURNER/RHINO 71962. Expanded and remastered version of the score to the classic 1958 film featuring Maurice Chevalier.

THE FANTASY FILM WORLD OF BERNARD HERRMANN.

MOBILE FIDELITY 656. From 1974, here are gorgeously recorded performances of suites from *Journey to the Center of the Earth*, *The Seventh Voyage of Sinbad*, *The Day the Earth Stood Still*, and *Fahrenheit 451*, conducted by the composer.

BOBBY VEE AND THE SHADOWS:

The Early Rockin' Years.

ERA 5028. These long-out-of-print singles, originally released from 1959 to 1962,



make a convincing case for Vee as the best of Buddy Holly's disciples.

CLASSICAL

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DEBUSSY: Orchestral Works.

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CD's). "... an important document in the history of twentieth-century music as well as an exceptional listening experience" (April 1975).

FRITZ KREISLER:

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MOZART: Piano Concerto No. 9;

Symphony No. 41 ("Jupiter").

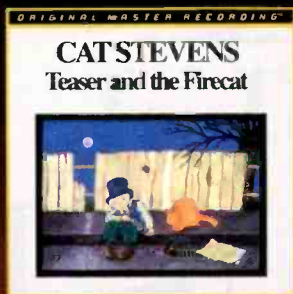
Rudolf Firkusny (piano); Concertgebouw Orchestra, George Szell cond. SONY 68445. Recorded live at the 1958 Salzburg Festival by Austrian Radio.

RUSSIAN FAVORITES FOR STRINGS.

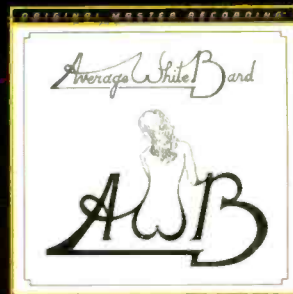
English Chamber Orchestra, Johannes Somary cond. VANGUARD SVC-27. Includes Tchaikovsky's *Serenade* in C, Arensky's *Variations on a Theme by Tchaikovsky*, Borodin's *Nocturne*, and Prokofiev's "Classical" *Symphony*. "... a quite extraordinary sense of space without any loss of detail" (December 1972).

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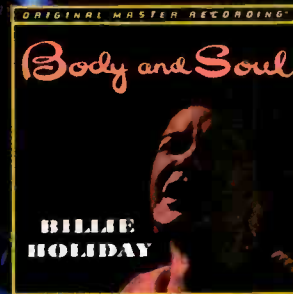
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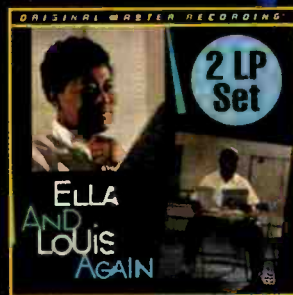
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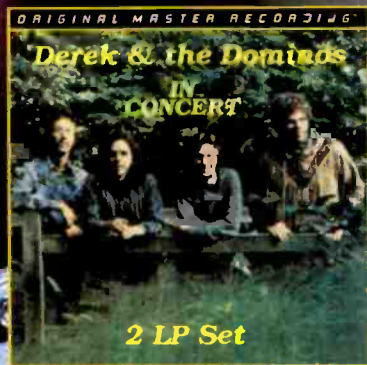
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POPULAR MUSIC

NEW RECORDINGS REVIEWED BY CHRIS ALBERTSON, FRANCIS DAVIS,
PHYL GARLAND, RON GIVENS, BRETT MILAÑO,
ALANNA NASH, PARKE PUTERBAUGH, KEN RICHARDSON, & STEVE SIMELS

ALICE IN CHAINS.

COLUMBIA 67248 (65 min).

Performance: Tedious

Recording: Thick

What's with this trend of popular bands apologizing in song for their very existence? Nirvana started it by framing "In Utero" with the self-lacerating *Serve the Servants* and *All Apologies*. Then Soul Asylum followed suit with a hit song (*Misery*) admitting they'd sold out big-time. Now along comes Alice in Chains with a song that's equally unkind to girlfriends, record label, and themselves, and whose title reads like a critical assessment of the band: *Sludge Factory*.

Unfortunately, that title is right on the money, since in purely musical terms Alice in Chains represents the rebirth of Quaa-lude rock. We're talking about lumbering bluster, we're talking about lack of dynamics and swing, we're talking about the

sound of Seventies dinosaurs hulking in the distance (it's telling that Ken Hensley, once the leader of the proto-Spinal Tap band Uriah Heep, is listed here under Special Thanks). There's nothing in itself wrong with all that: Smashing Pumpkins, Pearl Jam, and Nirvana have all borrowed heavily from arena rock to creative effect. But if Nirvana was the Led Zeppelin of alternative rock, then Alice in Chains is its Grand Funk Railroad.

This new effort is clearly meant to be a cathartic, "returning from the heroin depths" kind of album, except it's hard to feel any resonance when Layne Staley sings in a relentless monotone (since it's usually double-tracked, make that two monotones) and when his lyrics make you yearn for the subtlety of, say, Rush. And Alice is unique among alternative bands in that it plays sludge metal without subversion or irony: The guys just serve the damn stuff straight-up (and they need a more interesting guitarist than Jerry Cantrell to carry it off). They do, however, package their CD in a luminous green box, learning a lesson from Pink Floyd's "Pulse": If you can't make your album sound good, at least make it glow in the dark. *B.M.*

THE BEATLES: Anthology 1.

CAPITOL/APPLE 34445 (two CD's, 123 min).

Performance: Need you ask?

Recording: Excellent, considering

Here it is, more than 30 years after the Beatles barnstormed these shores, and I'm listening to a new album that features cover artwork assembled by Klaus Voormann, liner notes by Derek Taylor, production by George Martin, and music by John, Paul, George, and Ringo. "Anthology 1" includes mostly unreleased recordings made between 1958 (priceless Quarrymen demos) and 1994 (*Free as a Bird*). Actually, the latter song — the much-ballyhooed reunion of John Lennon (via an unfinished 1977 demo) with the other guys (who completed the tune 17 years later under the auspices of

Jeff Lynne) — is the only item here recorded after October 1964.

What a lot of fun it is! Among the highlights are excerpts from the Fab Four's 1962 Decca audition tape (five of fifteen tracks are included), a 1963 Swiss radio concert (five of seven songs they played), and their Royal Command Performance back home in England that same year (three of four songs). The fact that these events are incomplete here may rile some collectors, and it would have been nice to have all of the tracks in one place, since they are all wildly enjoyable. If you doubt these boys could rock, listen to the almost inconceivable energy poured into Little Richard's *Long Tall Sally* and the Isley Brothers' *Shout* in the versions recorded for the 1964 *Around the Beatles* TV special. Such fireworks — and there are many of them on this "Anthology" — bear out Paul McCartney's modest claim made in the recent TV documentary: "Often, we could just play any little blues, little rock-and-roll thing, and it just seemed to work, seemed to jell."

Showcasing the wild and innocent years when rock-and-roll came into its own, "Anthology 1" captures much of the spark to which McCartney referred. It's righteous, ripping, and rafter-rattling, clear through to the last track in the set, a frantic outtake of the Wilbert Harrison/Little Richard medley

MAKE MINE MEEK

Joe Meek was the first independent pop producer in England, whose most famous record, *Telstar*, was an American hit a year before the Beatles arrived. He was also a studio innovator whose homemade electronic effects anticipated synth-pop, an occult buff obsessed with the ghost of Buddy Holly, and an all-around weirdo — a cross, if you will, between Phil Spec-



tor and Ed Wood, Jr. Now Razor & Tie has released the first Stateside collection of his work, "It's Hard to Believe It: The Amazing World of Joe Meek" (2080), and you're unlikely to hear a more charmingly off-the-wall period piece anytime soon. Best bits: two cuts from Joe's unreleased 1960 solo record (a concept album about outer space) that eerily presage Mike Oldfield and Philip Glass. *S.S.*

The Beatles, 1963: Forever Fab



EMI RECORDS

Kansas City/Hey-Hey-Hey-Hey! If you care at all about the Beatles, rock-and-roll, and the Sixties, this is a mandatory acquisition. 'Nuff said. P.P.

BOBBY DARIN:

**As Long as I'm Singing:
The Bobby Darin Collection.**

RHINO 72206 (four CD's, 261 min).

Performance: Like a dream, lover!
Recording: Fine

Bobby Darin was the original *poppelganger*, capable of assimilating the idioms of Frank Sinatra, Ray Charles, Chuck Berry, and half a dozen others. In the notes to Rhino's comprehensive anthology, fellow rock star Dion refers to Darin as "an original," yet this mixmaster didn't develop a new style so much as figure out which existing ones to blend together. He dabbled in every genre short of opera (including an overlooked Dylan-inspired ramble through country and folk territory, explored in the last disc here), but most important he rejuvenated classic pop with the rabble-rousing energy of rhythm-and-blues.

The first Sinatra-style entertainer to elaborate on the Chairman's aggression, Darin made the connection between the undercurrents of antisocialness inherent in Sinatra and Elvis Presley, and he became one of Sinatra's few rivals in terms of both rhythm and attitude. In an essay here, Darcy Sullivan theorizes that *Mack the Knife* and the equally morbid-yet-swinging *Artificial Flowers* struck a nerve because the short-lived pop star (1936-1973) was in fact defying death. Even from beyond the grave, Darin's vivacity is impossible to resist.

Will Friedwald

DON HENLEY:

Actual Miles: Henley's Greatest Hits.

GEFFEN 24834 (73 min).

Performance: Good collection
Recording: Shril

The carrot that's dangled at the end of a stick to make you buy this album of reissued material is a 7-minute epic called *The Garden of Allah*. Touted as Don Henley's *Hotel California* for the Nineties, it sounds more like a Motel 6 bedecked with crepe paper. Henley and his three co-writers have come up with a track that thumps along like Bigfoot dancing to Led Zepelin's *Kashmir*. Rock's most lacerating moralist does manage to hit a few rather obvious nails right on the head, as when he observes: "It was a pretty big year for predators / The marketplace was on a roll / And the land of opportunity / Spawned a whole new breed of men without souls."

Though *The Garden of Allah* isn't quite the Big Statement it aims to be, at least Henley is addressing the subject matter with a righteously indignant pen instead of serving up escapist fare. Actually, he buries his real Big Statement at the end of the CD in the form of an unlisted track whose title would seem to be *Everybody Knows*. A gloomy précis of mankind's decline and fall, it condenses the whole sordid state of human affairs into words that draw blood, exiting with these cheerless lines: "Every-

Born to Run, and Run

In a commendable act of artistic camaraderie, Bruce Springsteen has gone to bat for Joe Grushecky, the deserving rocker who has been struggling to keep his head above water. Springsteen produced "American Babylon," played guitar and/or mandolin on damn near every track, and co-wrote two of the album's most haunting, hard-hitting songs, *Dark and Bloody Ground* and *Homestead*. Grushecky isn't as abundantly gifted as Springsteen, but what he lacks in vision he makes up for in soul.

It's a certainty that Grushecky has gotten to know the working-class steel-town folks he writes about not by studying them from a distance but by living right alongside them. His desperate scenarios of life in these hard times apply not only to his home crowd in Pittsburgh but to any place in the country where the gap between the haves and the have-nots continues to widen and the moral fabric has frayed.

Grushecky's cigarette-rasp voice falls somewhere between that of Southside Johnny and Willy DeVille. Throughout "American Babylon" his plainspoken delivery is set off by stark, skeletal arrangements. Anger and resignation course

through the title track, a black-humored anthem that satirically vilifies the status quo ("Got everything I need / Drugs, money, sex, and greed"). He touches upon aspects of the American Dream gone wrong in settings both historical (*Homestead*) and contemporary (*Talk Show*). At the same time, he demonstrates a more personal touch with an unabashedly devotional love song (*Labor of Love*) and a pair of breakup numbers (*Chain Smokin'* and *Never Be Enough Time*) delivered with weary, rueful candor.

As a family dissolves in the song *Only Lovers Left Alive* because the escapist husband refuses to shoulder his responsibilities, you can't help but sense a chill in the air that has settled over the whole country. "American Babylon" takes an unsparing look at what's gone wrong

and puts it on the table for all of us to hear. You could call the album Joe Grushecky's red, white, and blue-plate special.

Parke Puterbaugh



PAMELA SPRINGSTEEN

Grushecky: Who's the boss?

**JOE GRUSHECKY
AND THE HOUSEROCKERS:
American Babylon.RAZOR & TIE 2820 (56 min).**

body knows that it's coming apart / Take one last look at this sacred heart / Before it blows / Everybody knows." This unnerving track alone is worth the price of admission to "Actual Miles," which also includes one song from "I Can't Sit Still," four from "Building the Perfect Beast," five from "The End of the Innocence," and another newie that sounds like a kiss-off to labelmeister David Geffen cleverly couched as a relationship song. P.P.

ERIC MATTHEWS: It's Heavy in Here.

SUB POP 312 (42 min).

Performance: Formalist
Recording: Lush

Wonder of wonders, here's an actual pop album on Sub Pop, the feisty indie label known for grunge, neo-punk, and art-punk — just about anything but Sixties-inspired songcraft (unless it's by revisionists like Sebadoh and Velocity Girl). Eric Matthews is as Sixties-inspired as they come, and that's both his strength and his weakness. His debut is a smart, heartfelt homage to the ornate, less rocking side of late-Sixties Anglo-pop, but in the end it doesn't add enough to the tradition.

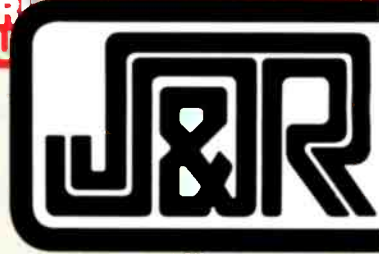
At least Matthews has found an original source to draw from: While most neo-pop-

sters tend to emulate the four big B's — Beatles, Beach Boys, Badfinger, and Big Star — Matthews has a serious jones for Colin Blunstone, former lead singer of the Zombies. He's got Blunstone's breathy, wounded-choirboy voice down to a T, and "It's Heavy in Here" alludes equally to the Zombies' acknowledged masterpiece, "Odessey and Oracle" (especially in its



prominent use of harpsichord, acoustic guitar, and strings), and to the gorgeous melancholia of Blunstone's overlooked mid-Seventies solo work.

Unfortunately, you won't find a *Time of the Season* on Matthews's album. Unlike Blunstone, who had the gifted Rod Argent/Chris White writing team to work with, Matthews himself tends to write half-



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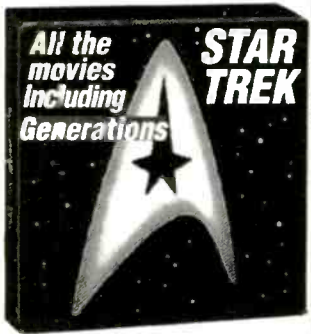
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convincing pastiches of period melodies and moods. The only tune that really sticks in the memory is the opening/closing *Fanfare*, and for the wrong reason: Its verse melody is alarmingly close to that of *Hernando's Hideaway*. Much as I admire Matthews's taste, "It's Heavy in Here" either sends me back to the source (coincidentally, Epic/Legacy has just released a Blunstone anthology, "Some Years") or to less reverent neo-pop outfits like the Smithereens and the Loud Family. Of course, if I ever put together a Colin Blunstone tribute album (prospective title: "Let's Go Get Blunstoned"), Matthews will be the first guy I call. *B.M.*

MEAT PUPPETS: No Joke!

LONDON 828 665 (55 min).

Performance: Head music
Recording: Good

Arizona's Meat Puppets finally transcended cult status thanks to Kurt Cobain's generous exposure of them on Nirvana's "MTV Unplugged," not to mention the strong album the Puppets subsequently released, "Too High to Die." That record was a magical mystery tour through an evocative landscape — and the closest any band has come to true acid-rock in a quarter century.

There aren't any radical amendments to that blueprint on "No Joke!," but the overall mood is measurably more ominous, as evidenced by the dissonant modal exotica strewn throughout and by such odd departures as a doomy meditation for piano-and-strings entitled *Head*. "No Joke!" has the recurring theme of losing one's grip on reality, which surfaces in the fractured wordplay and the D.T.'s-laden S.O.S.'s that emanate from the Meat Puppets' altered consciousness. This time out, their chemically conjured visions are not funny or trippy but downright threatening ("No Joke!" indeed), as in the hard-to-miss metaphor for cracking up offered in *Head*: "As the head falls off the table / Crashes to the floor and shatters / Dust and glass is blowing everywhere / Down there."

The Meat Puppets have created some of their most exhilarating musical settings for "No Joke!," from the Concorde-like takeoff of *Scum* to the lost-in-the-ozone buzz of *Sweet Ammonia*. They continue to unearth a lot of colorful, Jungian symbols in sound, despite intimations that the price they pay for such excavations is their sanity. *P.P.*

JO CAROL PIERCE:

Bad Girls Upset by the Truth.

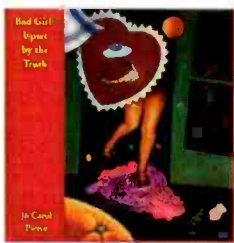
MONKEY HILL 8132 (79 min).

Performance: Texas on Mars
Recording: Good 'nuff

Fans of the Off-Broadway production *Chippy* will remember Jo Carol Pierce, the hilariously offbeat songwriter and monologist who is a cowboy-booted goddess in her hometown of Austin, Texas. "Bad Girls Upset by the Truth" explores the intertwining of sex and religion from the viewpoint of a bubble-headed Texas high-school girl who turns out to be smarter than you think (one critic has already compared

it to "a wiggled-out version" of Laurie Anderson's "United States").

A woman who knows no one-syllable words and who specializes in run-on sentences, Pierce writes highly original, poetic, and witty songs with titles like *Vaginal Angel* (sample verse: "Under her blouse were many naked cowboys / Driving round and round her Hi-De-Ho"). The between-song monologues are often even more entertaining; at their best, they build a head of steam until each line is more absurd and funnier than the previous one. The album is much too long (three-quarters of the way through, you'll be tempted to yell, "Jo Carol, would you please just shut up!"). But with the vocal help of Jennifer Wames, among others,



and the mandolin accompaniment of Stephen Brouton, it delivers some indelible moments, ones you'll likely play again — or maybe just drive around your Hi-De-Ho for enjoyment. *A.N.*

BONNIE RAITT: Road Tested.

CAPITOL 33705 (two CD's, 103 min).

Performance: She's a pro
Recording: Top-notch

If "Road Tested" is 100-percent live and without overdubs, as the credits indicate, then Bonnie Raitt is one of the most pitch-perfect, flub-free performers in rock-and-roll history. Surely, no mere mortal could possibly sound this unblemished and in-tune, especially a singer/guitarist backed by six musicians and augmented by a rotating cast of guest artists.

Be that as it may, there's some mighty fine music here, particularly when Raitt harks back to her blues-filled past. Don Covay's *Three Time Loser* has a good, boisterous kick, and it's hard to beat a song that includes cameos from the likes of Ruth Brown and Charles Brown (*Never Make Your Move Too Soon*), even if it was written by an L.A. hack like Will Jennings. Raitt's all-too-brief quasi-acoustic interlude, which has a spirited Mississippi Fred McDowell medley, is a lot more limber than the serious singer/songwriter fare she serves up in more generous portions throughout the set. Thanks to Raitt's gritty commitment, the songs that radio has drilled into our collective consciousness — *Something to Talk About*, *Thing Called Love*, and *Love Sneakin' Up on You* — cook up a sinuous groove. In her capable hands, *I Can't Make You Love Me* remains one of the most moving and least sentimental testimonials ever sung about unrequited love.

The problem with Raitt in general and this album in particular is an overall lack of vision. Since she has become so reliant on



others for material — the incongruous likes of Richard Thompson, Bryan Adams, John Prine, and Talking Heads are all represented here — she has lost something of her own identity. And with the endless guest spots that turn the second disc into a variety show, plus such dubious song choices as the bathetic *Louise* (which really belongs to Leo Kottke anyway), "Road Tested" ultimately shows a confused and inconsistent portrait of this gifted performer. Raitt ought to let more of her old sassy, unrepentant self out of the box and give the polished, well-meaning artiste a rest for a while. It didn't hurt Eric Clapton one bit to seriously reacquaint himself with the blues. Listening, Bonnie? *P.P.*

THE ROLLING STONES: Stripped.

VIRGIN 41040 (58 min).

Performance: Hanging in there
Recording: Fine no-frills

Good Lord, I hear you saying, not another "Unplugged" album by an aging rock band. Not another group declaring creative bankruptcy by rerecording 20-year-old songs. Not another desperate attempt by the Rolling Stones to prove they're not dead yet. Well, yes on all counts, but "Stripped" sounds much better on disc than it does on paper. Like most of what the Stones have done this decade, it's more fun than it has any right to be.

The band clearly approached this set with a fitting "no big deal" attitude, not even bothering to play unplugged by the rules: The guitars are electric as often as acoustic. Chuck Leavell's Hammond organ is (of course) plugged in, and Darryl Jones — who has stepped remarkably well into Bill Wyman's shoes — plays electric bass throughout. With Mick Jagger sounding more like Mick Jagger than he did on the band's last two tours, the sound mix is close to late-Sixties Stones, which is likely what retro-minded producer Don Was had in mind. For example, the unlikely but fine cover of Bob Dylan's *Like a Rolling Stone* reveals how that tune would have sounded if it had been on "Beggars Banquet."

The real news is that the Stones have given their warhorses a rest and dug up songs that require a little more emotional investment. That they've remade *Wild Horses* without falling on their faces is in itself reason to celebrate. So is the surprisingly feisty *I'm Free*, the gospel-ish buried treasure *Shine a Light*, and the handful of relaxed and winning blues numbers. True, the song list leaves room for quibbles: *Waiting On a Friend*, the last truly great Stones song, should be here, and there are at least a dozen Keith Richards-sung numbers that

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POPULAR MUSIC

could have better filled the slot occupied by *Slipping Away*.

The only serious disappointment is the much-hyped multimedia content of this enhanced CD — video snippets, lyrics, and a commercial for the Stones' CD-ROM of "Voodoo Lounge," amounting to a waste of disc time. But "Stripped" gives you a guilt-free chance to feel like a Stones fan one more time, and if it doesn't approach the crazy heights of "Get Yer Ya-Ya's Out!" or the teenage mania of "Got Live If You Want It," it easily qualifies as the Rolling Stones' third-best live album. **B.M.**

BOB SEGER AND THE SILVER BULLET BAND: *It's a Mystery*.

CAPITOL 99774 (43 min).

Performance: It's more a snore

Recording: Good

On his first studio album in four years (and the first he has self-produced in his 30-year career), a curmudgeonly Bob Seger turns a jaundiced eye to life. In *Lock and Load* he berates himself for losing sight of what's important on his personal journey, while *By the River* finds him searching for connectedness on a basic human level, extolling the virtues of patience and order. Then, turning angry in *Revisionism Street*, he takes on the writers of unauthorized celebrity bios. Throughout, Seger veers from rough rock-and-roll to a less interesting (if more polished) production that seems a bit out of date — Eighties synth-drums and all. The one time he's really out on the edge is in a hard-driving cover of Tom Waits's *16 Shells from a 30-6*, where Seger suggests that his old muscle hasn't really gone to flab. But alas, it's only a flashback. Seger and the Silver Bullet Band have, sadly, turned to brass. **A.N.**

CHERYL WHEELER:

Mrs. Pinocci's Guitar.

PHILO 1192 (39 min).

Performance: Affecting

Recording: Very good

Folkie Cheryl Wheeler understands pacing. Just when she runs the risk of OD'ing on Sensitivity, she throws in a zingy piece of tongue-in-cheek social commentary that brings everything down to earth. "Mrs. Pinocci's Guitar" has three such gems: *TV*, about a channel surfer's anxiety during a power outage; *Is It Peace or Is It Prozac*, about her initial flirtation with psychiatry, and *Makes Good Sense to Me*, which stamps Newt's Contract with America null and void. Elsewhere, Wheeler places a thoughtful wake-up call to anybody with an aging loved one (*Time Taketh Away*) and collars a memorable love song to her dog (*Howl at the Moon*). Any woman with a repertoire this cool deserves some sort of award. Wheeler, though, would probably rather take it in Prozac stock. **A.N.**



JAZZ

JOHN FEDCHOCK:

New York Big Band.

RESERVOIR 138 (75 min).

Performance: Shades of the old Herds

Recording: Very good

From its fiercely swinging opening track, *Limehouse Blues*, to the equally paced treatment of the *Flinstones* theme that closes the album, trombonist John Fed-

chock's debut as leader is a winner. The New York Big Band is a finely lubricated, precise ensemble whose well-structured charts and sprightly solos are wonderfully reminiscent of the best work by Woody Herman's Herds, where Fedchock played for seven years.

Fedchock's solos are lyrical statements in such numbers as Monk's *Ruby, My Dear* and his own *The Groove City Groover*, whereas *Flinstoned* offers a dazzling display of virtuosity. This generously timed album gives everybody space to stretch, with noteworthy solos by trumpeters Barry Ries, Greg Gisbert, and Tim Hagans, saxophonists Rich Perry (tenor), Mark Vinci (alto), and Scott Robinson (baritone), and each member of the rhythm section: pianist Joel Weiskopf, bassist Lynn Seaton, and drummer Dave Ratajczak.

Unfortunately, in today's economy it's nearly impossible to keep a big band together as a working group, so Fedchock's tours have him fronting a variety of locally assembled bands. But his solos and arrangements should make even such makeshift appearances worthwhile. "New York Big Band" certainly has my recommendation. **C.A.**

FREDDIE HUBBARD:

Monk, Miles, Trane & Cannon.

MUSICMASTERS JAZZ 65132 (55 min).

Performance: Bless the supporting cast

Recording: Good

He was one of Art Blakey's star graduates — from the same class that brought Wayne Shorter front and center — and he contributed mightily to sessions led by Ornette Coleman and John Coltrane, but when left to his own devices, Freddie Hubbard has often tended toward the commercial. It's been about three years since the release of his last CD as a leader, and the return is worth noting, even if it's not the splendid album Hubbard and his supporting cast are capable of producing.

The nearing-60 trumpeter has surrounded himself with a band of younger players whose spirit makes up for a couple of cumbersome arrangements and the leader's occasional display of bum chops. Pianist Stephen Scott is outstanding throughout, both as a soloist and — with bassist Peter Washington and drummer Carl Allen — as a force in the group's driving rhythm section. Saxophonists Vincent Herring and Javon Jackson demonstrate why they are among today's most promising new players, and trombonist Robin Eubanks is marvelously articulate in Hubbard's *Spirit of Trane*. Baritone saxophonist Gary Smulyan is mainly relegated to the ensemble, but he is allowed to blossom in *Off Minor*.

Sad to say, Hubbard is mostly disappointing. His tone is engagingly crisp, but his solos are often disjointed and, well, unmusical. If, as Duke Ellington once said, "Playing bop is like playing Scrabble with all the vowels missing," then Hubbard's musical syntax is missing a few consonants, too. He has always had a way with ballads, though, and it's here that he occasionally redeems himself. **C.A.**



Cheryl Wheeler: songs for swinging canines and channel surfers

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POPULAR MUSIC

LAWRENCE D. "BUTCH" MORRIS:
Testament: A Conduction Collection.
 NEW WORLD/COUNTERCURRENTS 80478
 (ten CD's, 592 min).
Performance: In-the-moment composition
Recording: Very good

The only collection I know of that is comparable to "Testament: A Conduction Collection" is Cecil Taylor's ten-CD set from Berlin, released on FMP about six years ago. Butch Morris, however, is equally worthy of his own gargantuan box set.

Morris's "conductions" — his own word for what he does, even though he stands in front of his musicians cueing their entrances and exits instead of waving a baton — turn on what might appear to be an unresolvable contradiction: the belief that completely unpremeditated performances (or ones based on minimal thematic designs) are especially in need of a composer's guiding hand.

"Testament" includes domestic and foreign concert and studio performances re-

corded as long ago as 1988 and as recently as 1995. These vary in quality; the best is one from New York, atypical of Morris's work for his own groups in that it spotlights one soloist (alto saxophonist Arthur Blythe at his most stirring and impassioned) against the rest of the ensemble. Much else here, including an uncharacteristically clamorous 1995 performance with a Japanese group that embraces traditional koto as well as hip-hop turntables, is likely to appeal only to those for whom the journey is more fascinating than the destination.

Such listeners are the only ones likely to be interested in ten CD's of this music anyway, but they'll be grateful, as I am, for the numerous performances here that seethe and shimmer like the work of no other contemporary composer. *F.D.*

JOHN SCOFIELD: Groove Elation.
 BLUE NOTE 32801 (60 min).
Performance: Relaxed
Recording: Fine

Goosed along by Idris Muhammad's parade drums, Larry Goldings's wailing Hammond B-3, and John Scofield's own efficient horn arrangements, the guitarist's latest is an album of uninsistent funk that wears a little thin over the course of an hour but is pretty much irresistible a few tracks at a time. Best of all is the opener, the aptly titled *Lazy*, with Scofield switching to languid acoustic to conjure up visions of a Delta bluesman watching the maddening crowd with his feet up on a Laz-E-Boy recliner. *F.D.*

Collection

BIG BAND RENAISSANCE: THE EVOLUTION OF THE JAZZ ORCHESTRA.
 SMITHSONIAN 17618 (five CD's, 365 min).
Performance: Enlightening
Recording: Varies

The present-day big band refuses to die. A sequel of sorts to "Big Band Jazz," the Smithsonian's "Big Band Renaissance" picks up the story in the early Forties and attempts to bring it up to date. It's an anthology with a point of view. The emphasis is on arrangers — not surprising, given that Bill Kirchner, who compiled and annotated the set, is himself a highly talented arranger.

Fortunately, Kirchner's taste is both broad and discerning; "big band" doesn't connote a period or a particular style to him. Latter-day Count Basie, Duke Ellington, and Woody Herman are here, but so are Miles Davis and Gil Evans, Sun Ra, Willem Breuker, and Muhal Richard Abrams (to say nothing of Henry Mancini, Les and Larry Elgart, and Les Brown and His Band of Renown!). I could quibble that Illinois Jacquet and Rod Levitt should be here as well and that there are better examples of Charles Mingus's work for orchestra than his 1957 *Revelations* — but only after stating in no uncertain terms that this set is an absolute treat. *F.D.*

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QUICK FIXES

THE CARS:

Anthology: Just What I Needed.

ELEKTRA/RHINO 73506 (two CD's, 152 min). Their cool/moderne electronic veneer notwithstanding, most of the Cars' best tracks — and they're all here — were at heart joyous pop confections in a rock tradition that goes back to Buddy Holly. Given a current climate where such values are suspect, this music has clearly dated some, but I suspect in a year or two you're going to hear a smart young Nashville cat doing *My Best Friend's Girl* without the irony. A terrific package. S.S.

EDDIE DANIELS: The Five Seasons.

SHANACHIE/CACHET 5017 (66 min). Titled in full "The Five Seasons: A New Vision of Vivaldi's The Four Seasons for Chamber Orchestra and Jazz Quartet," this recording features the classical/jazz clarinetist Eddie Daniels replacing the solo violinist. He plays these warhorses very well indeed, and the jazz embellishments on the Baroque idioms are discreet and tasteful. William Livingstone

THE SENSATIONAL ALEX HARVEY BAND: BBC Radio 1 Live in Concert.

GRIFFIN 406 (58 min). Before his heart-attack death in 1982 at the age of 47, Glasgow's Alex Harvey wandered through skiffle, soul, and the blues, as well as English vaudeville, Broadway musicals, and hard rock — most of which he occasionally employed in this aptly named band. The 1972-73 recordings included here are sharp, and Harvey is always no less than supremely entertaining. Key track: *The Faith Healer*, where his elastic, compelling vocals conjure a rock-and-roll Elmer Gantry. K.R.



MUD BOY & THE NEUTRONS:

They Walk Among Us.

KOCH 7913 (56 min). The Neutrons are a side project for a bunch of Memphis worthies, the best-known of whom is genius producer Jim Dickinson. The material here is rootsy — Chuck Berry, some blues and folk standards — but the treatment is completely demented: Imagine Howlin' Wolf backed by Tom Waits's band circa "Rain Dogs"

and you'll have only a vague idea of how Out There and brilliant this album is. Indispensable. S.S.



THE NEW DYLAN'S:

The American Way.

RED HOUSE 75 (42 min). This is first-rate modern folk-rock from a Pennsylvania band with something of the calmly reflective feel of early 10,000 Maniacs and a poetic bent that doesn't dishonor their tongue-in-cheek namesake. Pick hit: the title tune, whose metaphorical conceit is that relationships can best be understood in terms of lines from the old *Superman* TV show. Worth hearing. S.S.

QUEEN: Made in Heaven.

HOLLYWOOD 62017 (71 min). Now don't write letters, because in Queen's heyday there was no bigger fan than yours truly, but "Made in Heaven" confirms how much an overemoting liability Freddie Mercury had become to the band prior to his death. The three survivors have finished tracks he began, but they're all ballads with precious little power. (A hidden elegy, at 20 minutes, is more *Killing Time* than *Playing Time*.) Anyone looking for the thrills of *Brighton Rock* won't find them in this drab bag. K.R.

DAN ZANES: Cool Down Time.

PRIVATE MUSIC 82133 (40 min). Dan Zanes, late of the Del Fuegos, plays scratchy guitars in front of Mitchell Froom's moody organ and Jerry Marotta's spare drums. Filter this bluesy base through Froom's production of small gestures and the result is an album that recalls Los Lobos' "Kiko," though without the variety. Zanes's focused lyrics and unassuming melodies are welcome, but "Cool Down Time" sure could use a minute in the microwave. K.R.

THINGS TO DO IN DENVER WHEN YOU'RE DEAD

(Original Soundtrack Recording).

A&M 540 424 (44 min). A self-consciously quirky film occasions an only slightly less self-conscious soundtrack, in which the sinister minimalist sounds of Morphine (the new *Mile High*) contrast "ironically" with Dean Martin's Italianate oldie *You're Nobody Till Somebody Loves You*. Actually, most of the new stuff here is worthwhile, in particular cuts by Freddy Johnston and Buddy Guy with the Neville Brothers. S.S.

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BEETHOVEN: Piano Sonatas Nos. 16, 17 ("Tempest"), and 18, Op. 31.

Stephen Kovacevich. EMI 55226 (64 min).

Performance: Eminently satisfying
Recording: Good

Stephen Kovacevich remains one of the most penetrating and fulfilling interpreters of the Austro-German Classical and high Romantic repertoire, as is demonstrated wonderfully in this performance of the three Op. 31 piano sonatas. The first of the set, No. 16, in G Major, seems to look backward to late Mozart and Haydn. Kovacevich's playing is the epitome of elegance here, especially in the superbly nu-



anced slow movement. The way he captures the sly wit in the easy-paced amble of the finale is pure delight.

I fail to sense anything of Shakespeare's *The Tempest* in No. 17, in D Minor, despite Beethoven's hint (was the title a jest?), though there is an undercurrent of unease and anxiety. The musical language anticipates the late sonatas and string quartets. It is wonderful music and a major interpretive challenge, to which Kovacevich rises both in the warmth he brings to the adagio and in the nervous energy of the finale. The concluding fadeout is a marvel.

There is an element of wistfulness in the opening movement of the Sonata No. 18, in E-flat Major, with its characteristic drooping figure, but the predominant mood is healthy well-being, as exemplified in the bracing tune that propels the second movement, a scherzo. The fourth movement, all

dash and vigor, is carried off with consummate virtuosity.

I have one tiny beef about this otherwise richly satisfying CD: The piano sound, while true to life and to the biggish acoustic surround of EMI's Abbey Road Studio 1, diminishes the music's innate intimacy. All the same, this disc should grace the collection of anyone who loves the Beethoven piano sonatas. *D.H.*

BRUCKNER: Symphony No. 3 ("Wagner Symphony").

Royal Concertgebouw Orchestra, Nikolaus Harnoncourt cond. TELDEC 98405 (55 min).

Performance: Lean
Recording: Good

Bruckner called the ill-starred Symphony No. 3, in D Minor, his "Wagner Symphony" not only because of the numerous Wagner quotations in its original version, but also because the Bayreuth master accepted his offer of the dedication when they met in 1873. In 1877-78, however, Bruckner knocked out most of the Wagner quotations and tacked a coda onto the scherzo, and in still another revision in 1888-89 he made major cuts in the finale which threw its proportions out of kilter. Nonetheless, it is this third version, as edited by Leopold Nowak, that has been used for most of the dozen-odd recordings currently available, including this new one led by Nikolaus Harnoncourt.

Much of the opening movement carries heavy resonances of the Beethoven Ninth Symphony. The slow movement is majestic and broody. The scherzo is Bruckner in his most appealing countrified *Ländler* manner. The combination of monumentality with a "down home" polka element in the finale is intriguing. The ending is, of course, triumphant.

Harnoncourt's reading is on the lean and swift side for the first two movements. If you find the monumentalism of Herbert von Karajan's and Günter Wand's recordings a

Half a "Ring" From Cleveland

Though Cleveland is hardly about to replace Bayreuth as the Wagner mecca, conductor Christoph von Dohnanyi, music director of the Cleveland Orchestra, is recording Wagner's 16-hour cycle *The Ring of the Nibelung* there for London Records. He could have done it more quickly and cheaply in Vienna when he guest-conducted concert versions of the operas with the Vienna Philharmonic, but with his own orchestra, Dohnanyi told me, he stood a chance of vanquishing the ghosts of other conductors and getting his interpretation on disc.

"There's a famous quotation from Otto Klemperer, who said that he needed three rehearsals to unstudy the musicians and two to study them," Dohnanyi laughed. "It takes a lot of time to get rid of so-called tradition, and it doesn't take so much time to implant what's right about tradition."

Because Cleveland's Severance Hall doesn't readily accommodate live recording, the price tag is \$1 million for each opera in the four-part saga. The first, *Das Rheingold*, has just been released, and the second, *Die Walküre*, is in the can,

but nobody is sure if the other two (*Siegfried* and *Die Götterdämmerung*) will be recorded. "The market is saturated, and we're more cautious than we would've been five years ago," said Evans Mirageas, London's senior VP for A&R. "Contractually," Dohnanyi notes, "I'm here [in Cleveland] to the year 2000. I'd like to finish by then."

David Patrick Stearns



Conductor Christoph von Dohnanyi

JACK VAN ANTWERP/LONDON

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bit much or Georg Solti's Chicago Symphony performance too blatant, Harnoncourt's approach is a good compromise. His phrasing in the first movement is almost Schubertian in its flexible articulation. There's less space around the sound than usual in recordings made in the Concertgebouw, probably because this one was done in concert with an audience. *D.H.*

EINHORN: *Voices of Light*.

Anonymous 4, others: Netherlands Radio Choir; Netherlands Radio Philharmonic. Steven Mercurio cond. SONY 62006 (71 min).

Performance: Strong
Recording: Superb

Richard Einhorn's *Voices of Light*, described as an oratorio for voices and amplified instrumental ensemble, was originally written to accompany the rediscovered original version of Carl Dreyer's film masterpiece, *The Passion of Saint Joan*. The medieval texts, assembled by the composer, include lines from Joan's own (dictated) letters, meditative poetry by female mystics (notably Hildegard von Bingen), and even a couple of misogynist anti-Joan ditties.

The exquisitely beautiful score, evocative of both early music and Carl Orff, stands up surprisingly well on its own, and it is superbly performed and recorded. I didn't quite believe all the work's pieties (the consistently spiritual tone denies it the raw energy of Orff's secular cantatas), but the music is so thoroughly uplifting and so unerring that, like Joan herself, it has the power to convince even the most hardened skeptic. It did this one. *E.S.*



GOLDSCHMIDT: *Beatrice Cenci*.

Simon Estes (Francesco Cenci), Della Jones (Lucretia), Roberta Alexander (Beatrice), others: Berlin Radio Choir; Berlin Symphony Orchestra, Lothar Zagrosek cond.

Four Songs.

Iris Vermilion (soprano); Berthold Goldschmidt (piano). SONY 66836 (two CD's, 121 min).

Performance: Strong
Recording: Well-made

Berthold Goldschmidt was born in 1903 in Hamburg, Germany, studied in Berlin, and was on the verge of a major career when the Nazis came to power and chased him to England, where he was active as a conductor but had little success as a composer. In 1951 the Arts Council of Great Britain sponsored a competition for a new opera, and Goldschmidt submitted his *Beatrice Cenci*, based on Shelley's lurid verse drama of rape, incest, murder, and execution. It won first prize but, ironically, only a few excerpts were performed in concert until the late 1980's.

Beatrice Cenci, while not a masterpiece, is an effective traditional-style grand opera with sex and violence, good female roles, and a few genuinely inspired numbers,

mostly for the mother and daughter, movingly sung in this recording by Della Jones and Roberta Alexander. Simon Estes lacks conviction as the famously evil father. Perhaps that is not entirely his fault — the role somehow ought to be juicier than it turns out to be. Since Goldschmidt and his librettist bent over backward to avoid being too lurid or violent, the incarnation of evil that is Francesco Cenci is weakened, and all the focus is on the two women. That works up to a point, but in the end their trials and tribulations are too abstract, without enough perceived dramatic conflict to give the action its motor.

The Deutsches Symphonie-Orchester Berlin under Lothar Zagrosek gives a stalwart reading of the colorfully orchestrated score, which supports the very idiomatic melodic writing for the voice. The overall sense of this performance is of a concert rather than a dramatic reading, but in other respects the work seems very well represented. As a bonus there are four attractive songs in German and English (including a Shelley setting that was incorporated in the opera), performed by Iris Vermilion with the composer at the piano. *E.S.*

PROKOFIEV: *Violin Sonatas Nos. 1 and 2; Five Melodies*.

Vadim Repin (violin); Boris Berezovsky (piano). ERATO 10698 (63 min).

Performance: Soulful
Recording: Very good

There are some half dozen CD's with the two Prokofiev violin sonatas plus the Five Melodies; it's a programming natural. The sonatas overlap each other in composi-

BARTOK FOR SOLO PIANO

There have not been as many recordings as we might have expected to mark the fiftieth anniversary of Bartok's death last September. Sony's new four-disc set of his solo piano music, played by Gyorgy Sandor, would have stood out in the most crowded field; its breadth and depth make it uniquely apt to the occasion and at the same time something whose value is by no means limited to the anniversary connotation. Sandor, 83 now, has been playing this music longer and more authoritatively than anyone else around today. He studied piano with Bartok himself, who used his own music frequently in his lessons. Fifty years ago Sandor gave the premiere of the last of Bartok's three piano concertos, and he made the first recording of it (with Ormandy and the Philadelphia Orchestra); since then he has been a constant presence in the Bartok discography. After recording the complete *Mikrokosmos* for Columbia in 1956, he recorded all the solo works, all three concertos, and the Sonata for Two Pianos and Percussion for Vox. For Sony, which reissued the 1956 *Mikrokos-*

mos on CD a few years ago, he recently remade the concertos in Budapest with Adam Fischer conducting.

Sandor rerecorded all the solo material except *Mikrokosmos* in Hamburg between July 1993, when he was approaching 80, and January 1995. The sound is splendid, and the years have taken away none of the pianist's ardent commitment — or his vig-

or. The favored "demo track" here is sure to be the exuberant yet subtle presentation of the *Allegro Barbaro* that opens Volume 4. In addition to that piece, the pedagogical ones (*For Children, First Term at the Piano, Ten Easy Pieces*), and virtually all the more or less familiar titles (*Out of Doors*, the bagatelles, the sonata, the sonatine, the numerous treatments of Hungarian and Romanian folk material, and so on), Sandor includes his own transcription of some of the duets for two violins — here following the *Petite Suite*, which comprises transcriptions Bartok himself made from the same source. Sandor also provides his own illuminating and engaging notes for each of the four discs. Sony advises there are no plans to make the discs available singly, but the set should be self-recommending to anyone seriously interested in Bartok's brilliant music for his own instrument, even if it means duplicating some titles. *Richard Freed*



Bela Bartok and Gyorgy Sandor, c. 1936

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BARTOK: *Solo Piano Works*.

Gyorgy Sandor. SONY 68275 (four CD's, 287 min).

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tion chronology. No. 1, in F Minor, was begun in 1938 and not completed until 1946. Meanwhile, No. 2, in D Major, which had begun life as a flute sonata finished in 1943, was soon after refashioned in its more frequently heard violin garb. The Five Melodies were written as vocalises for soprano and then transcribed for violin around the



time of the 1921 Chicago world première of *The Love for Three Oranges*. All display Prokofiev's creative art in peak form.

The F Minor Sonata begins broodingly but moves into a rough-hewn, abrasive *Allegro brusco* second movement. Introspection returns with a songful andante, which then gives way to the all-out *moto perpetuo* virtuosity of the finale. The close calmly recollects the opening pages. The D Major Sonata is more Classical in spirit but follows the same slow-fast-slow-fast patterning of its movements. The poised first movement with its intensive development leads to a mercurial and dancelike scherzo, then to a serene andante and a finale with contrastingly brilliant and lyrical episodes. The Five Melodies range from the calm and wistful No. 1 to the passionate No. 3, the brief and wayward No. 4, and the gently ironic No. 5.

Siberian-born Vadim Repin and his Moscow colleague Boris Berezovsky, both in their twenties and now living in Germany, are ideally cast for this music. They bring plenty of soul to the slow movements and tremendous verve to the fast ones, yet still preserve the sense of proportion that underlies the essentially classic aesthetic of Prokofiev's chamber music. The recorded sound is eminently satisfying. *D.H.*

PUCCINI: *La Bohème*.

Kiri Te Kanawa (Mimi), Nancy Gustafson (Musetta), Richard Leech (Rodolfo), Alan Titus (Marcello), Gino Quilico (Schaunard), Roberto Scanduzzi (Colline), others; Ambrosian Singers; London Symphony, Kent Nagano cond. ERATO 10699 (two CD's, 106 min).

Performance: Workmanlike
Recording: Good

Kent Nagano's direction is nicely paced, lyrical but not sentimental, and brisk and crisp when required (for example, in the difficult busy-ness of Act II). The Ambrosian Singers and the London Symphony Orchestra are responsive collaborators. The result is a solid if conventional *La Bohème*.

Soprano Kiri Te Kanawa's voice is consistently beautiful, her singing invariably polished. I do not, however, find her characterization emotionally compelling. Mimi's Farewell in Act III and the quiet scene with

Rodolfo in Act IV are memorable, but her total performance, while pleasing to the ear, is rather bland.

Richard Leech is her acceptable if dramatically unexciting poet-lover. Despite some effortful passages at the top of his tenor voice, he sings agreeably and with attention to Puccini's intent. Soprano Nancy Gustafson's Musetta is, happily, not overdrawn. The Waltz Song is winningly interpreted, and her sensitive concern for Mimi in Act IV is wholly believable. Alan Titus presents a convincing Marcello; his baritone voice, warm and well placed, is used to advantage both musically and dramatically. Baritone Gino Quilico and bass Roberto Scanduzzi are musically proficient as Schaunard and Colline. There isn't much fun in Schaunard's Act I shenanigans, but Colline's "*Vecchia zimarra*" is a delicate balance of humor and melancholy. The rest of the cast is also satisfactory. *R.A.*

REBEL: *Les Elemens*. TELEMANN:

Sonata in E Minor. GLUCK: Alessandro. Musica Antiqua Köln. Reinhard Goebel cond. DEUTSCHE GRAMMOPHON ARCHIV 445 824 (63 min).

Performance: Bracing
Recording: Brilliant

More than fifty years before the French Revolution shattered the established culture of Europe, its spirit of idealism and iconoclasm was foreshadowed in an orchestral suite by a little-known, aged composer in Paris named Jean-Féry Rebel. His *Les Elemens* begins with a deafening cacophony portraying the chaos of the universe before the Creation. This atonal noise, written nearly two centuries before Schoenberg, must have been as shocking in its own way as the fall of the Bastille. In the subsequent airs and dances, Rebel represents the happy state of Nature and the nobility of Man — exactly the ideals that were later expounded in the writings of Jean-Jacques Rousseau and served as the mainspring of the Revolution. The peppery, gingery performance here vividly captures the intellectual fervor of the Age of Enlightenment.

Gluck's ballet *Alessandro*, composed for the wedding celebrations of Marie Antoinette and the future Louis XVI, serves as the perfect counterpoint to *Les Elemens*. The French people resisted seeing their prince marry an Austrian Hapsburg, so Gluck, who was Kapellmeister to Marie's mother, the Empress Maria Theresa, chose a story that would mollify public opinion. The ballet depicts the love affair between Alexander the Great and Roxana, an Asiatic princess who poisons the lord of the world; she soon repents, gives him the antidote, and learns to be submissive and obedient. The Musica Antiqua Köln pours out the stately strains of this patriotic piece with great spirit and tenderness.

The disc is filled out with an appealing performance of another piece that was written by a German composer for a French audience, Telemann's elegant little *Sonata in E Minor*, a septet for oboe, bassoon, harpsichord, and strings in the style of François Couperin. *J.J.*

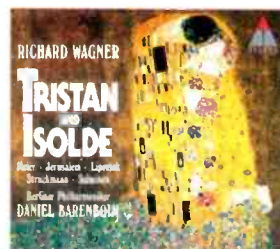
VILLA-LOBOS: *Forest of the Amazon*.

Renée Fleming (soprano); Chorus of the Moscow Physics and Engineering Institute; Moscow Radio Symphony Orchestra, Alfred Heller cond. CONSONANCE/ALBANY 81-0012 (73 min).

Performance: A bit frenetic
Recording: Hollywood size

The Brazilian composer Heitor Villa-Lobos had two unhappy brushes with the American entertainment industry, once when he was asked to write the score for a Broadway musical, and once when he was commissioned to score a movie version of W. H. Hudson's *Green Mansions*. The musical flopped, and the film music was revised, without the composer's participation or permission, by one Bronislaw Kaper. In both cases, Villa-Lobos salvaged his music and reworked it in concert form. The film score became a symphonic suite with vocals, parts of which were recorded near the end of his life.

Alfred Heller, who worked with the composer on that recording and is a founder of the Villa-Lobos Music Society, has now recorded the whole score in Moscow — about as far as you can get from the Amazon and still be on planet Earth. Renée Fleming sings the several exquisite songs and many wordless vocalises evoking the romantic figure of Rima, the jungle girl, in a most seductive manner. Otherwise, this monumental score has a kind of symphonic exoticism that is now quite dated ("corny" is the word), and the overwrought performance sounds curiously East European. Still, it is good to have this music in an accessible form; it certainly makes a juicy item for the growing legion of connoisseurs of obscure film scores. *E.S.*



WAGNER: *Tristan und Isolde*

Waltraud Meier (Isolde), Siegfried Jerusalem (Tristan), Marjana Lipovsek (Brangäne), Matti Salminen (King Mark), Falk Struckmann (Kurwenal), others; Berlin Philharmonic, Daniel Barenboim cond. TELDEC 94568 (four CD's, 236 min).

Performance: Generally excellent
Sound: Fabulous

Here is a magnificent new recording of one of the core Wagnerian masterpieces with an orchestral performance that can stand comparison with the best interpretations of the pre-stereo era. Daniel Barenboim has conducted this opera many times at Bayreuth and elsewhere, and in this recording he has molded an elegiac performance that soars and arches with inexorable grace through Wagner's score. The Berlin Philharmonic, judging from this and other recent recordings, is now playing with the

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QUICK FIXES

BRAHMS: Violin Concerto.

BRUCH: Violin Concerto No. 1.

Pinchas Zukerman (violin); Los Angeles and London Philharmonic Orchestras, Zubin Mehta cond. RCA VICTOR 68046 (65 min). Pinchas Zukerman and Zubin Mehta, in joyous total rapport, avoid the lure of monumentalism in the Brahms concerto and in both works here achieve that rare balance of virile drive and sweetness of expression that made their previous recording of the Bruch (now on Sony) so memorable. Lament, well-defined sonics throughout. *R.F.*



DURUFLE: Requiem, Op. 9; Mass "Cum Jubilio," Op. 11; Notre Père.

Patricia Spence (mezzo-soprano); François Le Roux (baritone); Voices of Ascension Chorus and Orchestra, Dennis Keene cond. DELOS 3169 (62 min). The French choral composer Maurice Durufle, who died in 1986, occupied the musical equivalent of a desert isle. His polished, highly ornate liturgical music, descended directly from late Romantics such as Fauré, was completely untouched by the revolutions of modernism. These resonant, deeply committed performances by an excellent choir based in New York City should win converts. *J.J.*

MAHLER: Symphony No. 3.

Olga Alexandrova (mezzo-soprano); choruses; Russian State Symphony, Evgeny Svetlanov cond. RUSSIAN SEASON/HARMONIA MUNDI 288111 (97 min). There are impressive sounds in this Russian performance of Mahler's longest and most varied symphony, most notably in the percussion department, but there is also precious little of the poetry and passion needed to convey his pantheistic vision. Mezzo Olga Alexandrova does creditably, but the reading as a whole lacks distinct character. *D.H.*

VAUGHAN WILLIAMS: Symphony No. 5; Fantasia on a Theme of Tallis. PREVIN: Reflections.

Curtis Institute of Music Orchestra, André Previn cond. EMI 55371 (69 min). This version of the deeply spiritual Fifth Symphony of Vaughan Williams by the Curtis Institute student players is no match

for André Previn's memorable 1972 recording with the London Symphony, but their reading of the Tallis Fantasia is superb, and so is that of Previn's own colorful *Reflections*, with its elegant and kaleidoscopic concertante scoring for cello and English horn. Good solid sound. *D.H.*

KRONOS QUARTET: Released Unreleased.

NONESUCH 79394 (two CD's, 100 min). The first disc, derived from CD's released over the last ten years, ranges from world music to works written for the group by Astor Piazzolla, Steve Reich, Henryk Gorecki, Terry Riley, and Philip Glass to a passionate performance of the original quartet version of the Barber Adagio for Strings to music by George Crumb and Arvo Pärt. The second disc contains the unreleased material: Scott Johnson's effective *It Raged*, with the voice of journalist I. F. Stone talking about holy wars, a silly piece by Michael Daugherty deconstructing Elvis, and hair-raising arrangements of a 1937 swing piece by Raymond Scott and Jimi Hendrix's *Purple Haze*. *E.S.*

MYSTERY OF THE EAST Music from Russian Churches and Monasteries.

Rybin Choir, Moscow; Sofia Orthodox Ensemble; Bulgarian National Choir. CAPRICCIO 10597 (70 min). Just when you thought the vogue for chant and mystic voices was over, here comes this excellent recording of fifteen short religious works by Rachmaninoff, Tchaikovsky, and others, sung with sincerity, devotion, and power by soloists and choruses from Russia and Bulgaria. F. Dubensky's setting of the Lord's Prayer is especially moving. *William Livingstone*



CAROL ROSENBERGER: Singing on the Water.

Carol Rosenberger (piano). DELOS 3172 (75 min).

With a well-planned program of barcarolles for piano by Chopin, Debussy, Fauré, Ravel, and others, this concept album ranks with Carol Rosenberger's earlier, highly esteemed "Water Music of the Impressionists" and "Reveries" CD's. She impressed me first with her beauty of tone and ability to create moods, but subsequent playings revealed more depth of interpretation, especially in Ravel's *Une Barque sur l'Océan* and Rachmaninoff's Op. 10, No. 3, barcarolle. *W.L.*

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majestic fluidity of the glorious early Karajan years.

Siegfried Jerusalem and Waltraud Meier are both in good voice here, and they bring great intelligence to their parts. They are very possibly the best Tristan and Isolde in the world at the moment, but they nonetheless do not, finally, meet the high standard of the orchestral performance. I am fully aware how irritating it is when music critics fault an artist for not being a dead person, but in the case of Wagner performances it is a bit different. He wrote the part of Tristan for a Heldentenor named Ludwig Schnorr von Carolsfeld, and in the first half of this century there were still Heldentenors, notably Lauritz Melchior, able to summon up the power and brilliant tone that it demands. I never knew Melchior, but I know Siegfried Jerusalem is no Melchior (my apologies to Lloyd Bentsen).

Does that mean we can't enjoy hearing a superb performance of *Tristan* in glorious, modern sound? Of course not. The quality of musicianship is impeccable throughout this recording, not least among the singers in the smaller parts. Matti Salminen is steady and sonorous as King Marke, while Marjana Lipovsek and Falk Struckmann are both intensely expressive as Brangäne and Kurwenal, the doomed lovers' confidants. And above all, Barenboim's inspired reading of the score will carry us through nicely until a new crop of great Wagnerian singers comes along. J.I.

Collections

KATHLEEN BATTLE: *Honey and Rue*.

Kathleen Battle (soprano): Orchestra of St. Luke's, André Previn cond.
DEUTSCHE GRAMMOPHON 437 787 (46 min).

Performance: A knockout
Recording: Souped-up

The work that gives its title to this CD was commissioned by Carnegie Hall from author Toni Morrison and composer/conductor André Previn for soprano Kathleen Battle. The music is a bit hokey, and the recorded sound is souped up like a bad pop album. And you know what? So what!

Kathleen Battle is a voice, but she is also an artist. When she opens her mouth, most of the rest doesn't matter. The sound is unfailing beautiful as she moves up and down through her high range and then across from an operatic sound to the "natural" tone of a pop or gospel singer. There never seems to be any sweat. She has the easy phrasing of a great jazz singer combined with the breath, breadth, and precise projection of a trained voice.

Morrison's poems in *Honey and Rue* are artfully simple and wonderfully evocative. Previn's music does not get high marks for originality, but each setting is perfect in its own way, and they are all neatly written and delicately orchestrated for the singer's voice and personality. The performance of Samuel Barber's setting of James Agee *Knoxville, Summer of 1915* is a knockout.

Summertime and *I Loves You, Porgy* from Gershwin's *Porgy and Bess* provide the encores. E.S.

DMITRI HVOROSTOVSKY:

My Restless Soul (songs by Tchaikovsky, Borodin, Rimsky-Korsakov, and Rachmaninoff).

Dmitri Hvorostovsky (baritone): Mikhail Arkadiev (piano). PHILIPS 442 536 (57 min).

Performance: Intense and moving
Recording: Excellent

The young and highly acclaimed baritone Dmitri Hvorostovsky is still building his operatic repertory but seems to have a vast reservoir of Russian songs. "My Restless Soul" is aptly named, particularly insofar as the Tchaikovsky songs are concerned, so full are they of yearning, loneliness, and dejection. *My Protector, My Angel, My Friend*, by the adolescent and exuberant composer, offers some gorgeous *mezzo-voce* singing. There are other unfamiliar Tchaikovsky songs as well: *The Love of a Dead Man* and *Ah, If I Could Only* (both from Op. 38) and *Whether the Day Reigns* (Op. 47, No. 6), which is virtually flooded with resplendent tone.

The artist is in great form even if he does allow his emotions to mar the vocal line at times and should have chosen a lower key for Rachmaninoff's *Spring Waters*. Despite the prevailing mood of almost unrelieved gloom, this is a splendid recital enriched by Mikhail Arkadiev's virtuosic pianism. G.I.

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THE HIGH END

PETER W. MITCHELL

Alternatives to the Super CD

In the two preceding columns I described in some detail the merging plans to standardize a next-generation "Super CD" based on the large capacity of the forthcoming digital video-disc (DVD). Last December, engineers representing the competing MMCD and SD proposals for the DVD announced they had resolved the major differences that had separated them. The first DVD players and movie discs built to a unified standard are expected to arrive in stores before this Christmas. It was also agreed that whenever discs and players are sold for use where NTSC television standards apply (North America and Japan), the discs will include Dolby AC-3 5.1-channel audio encoding and the players will incorporate AC-3 decoders. Players and discs in PAL/SECAM markets (mainly Europe) will use the Philips Musicam multichannel coding system.

Also in December, the RIAA (Recording Industry Association of America), representing major American record companies, appointed a working group to explore what the standards for a Super CD should be. Perhaps the fundamental question will be whether the new disc should be purely two-channel stereo, with higher resolution based on 20-bit analog-to-digital conversion and a higher sampling rate, or whether a more dramatic approach to realism would be obtained by standardizing all recordings and all playback systems to provide multichannel surround.

In the context of new discs using DVD technology for music, it's important to note that "multichannel" does *not* refer to AC-3 or other "5.1" home theater sound systems that are oriented toward the presentation of images on a screen. Keep in mind that AC-3 already uses digital data compression to squeeze its data rate to one-fourth that of the CD. The aim of developing a new multichannel system using DVD technology is to avoid digital data compression, perhaps recording all six channels in uncompressed form. More to the point, perhaps a new arrangement might be found — in contrast to the 5.1-channel home-theater layout — that more faithfully reproduces the subtleties of full-sphere concert sound in a great hall.

So the world's record companies will be exploring whether other multichannel arrangements (besides 5.1) are better for

music. These next few years are going to be a period of uncertainty as the developers of Super CD try to agree on standard formats that wisely use the disc's huge data capacity and also sound good.

This uncertainty is particularly unsettling to manufacturers who have already devised ways of making allegedly better-sounding CD's based on existing 16-bit technology. But to hear these improvements, listeners would need to buy either a new CD player or an outboard decoder.

What should equipment makers do? If you believe audio-only Super CD's based on DVD technology probably won't become an important part of the market until well after the turn of the century — perhaps because the struggle to standardize channel arrangements and signal formats will take years — it would make sense to rush the improved 16-bit CD's and decoders to market right away.

Should makers of improved 16-bit CD's and decoders rush to market now or wait for the Super CD?

A five-year market "window" is plenty of time to sell millions of improved CD's and the required decoders. After that time, if consumers decide to upgrade to DVD-based Super CD's they won't feel cheated by an intermediate improvement that provided better CD sound for several years.

On the other hand, what if DVD technology explodes in popularity, and the world's record companies rush to standardize a Super CD format in only a year or two? In that case manufacturers of improved 16-bit CD's who rushed to market might face a painful loss as consumers flocked to the glamorous new DVD's.

If you think I'm focusing on a rare and specialized problem, you've guessed wrong. I'm talking about a decision that is currently facing three developers who have devised three very different ways to make better-sounding CD's using conventional CD technology.

XTRA BITS is a proposal for a "buried data" channel in CD's. To understand

how it works, you must first understand the function of "dither" in all high-quality A/D conversion. Early critics of digital recording constantly complained that it couldn't sound good; the encoder must be "deaf" to information below the least-significant bit (LSB), or in the gaps between the lowest-level bits.

In fact, correctly made A/D converters have always added a noise-like "dither" signal to the input signal. It seems like low-level random "white" noise, but its effect is to constantly vary the audio signal so that it never "sits" below the LSB level nor in the gaps between the lowest quantization levels. In the XtraBits proposal by Oxford mathematicians Michael Gerzon and Peter Craven, the normal random dither signal would be replaced by a data signal whose bits have been scrambled in time to resemble random noise. These "pseudo-dither" bits would perform a normal dithering function during A/D conversion but would be unscrambled in the player to recover the original data signal. It seems fantastic, but such a "buried data" channel carry either a surround channel or the high-resolution bits of 20-bit encoding.

HDCD. Pacific Microsonics has not publicly explained the details of how its HDCD (High Definition Compatible Digital) system works, but encoders and decoders are already on the market. The encoder is said to modify the 16-bit signal by including low-level elements below the normal 16-bit limit, plus high-speed elements that would have been included if a wide-band encoder had been used. A few dozen HDCD-encoded discs are available, and full benefit requires a CD player with an HDCD filter/decoder circuit.

DTS. Some improvements are subtle. But there's nothing subtle about the transition from two-channel stereo to discrete four-channel surround sound. Digital Theater Systems (DTS) has devised a method of encoding four to six discrete channels of sound within the normal bandwidth of a CD. It sounds impressive; listeners have been unable to distinguish the playback from a multichannel master tape. There's just one drawback: if you listen directly to the output of the CD player, all you get is noise. The CD player's digital output must be decoded through a new Motorola chip to recover the encoded channels.

The first four-channel surround recordings — which will carry the High Definition Surround (HDS) designation — are expected to be released soon by Mobile Fidelity, an outfit that has specialized in surround sound for decades. Initial releases will include titles by Paul McCartney and Wings ("Band on the Run" and "Venus & Mars"), the Allman Brothers Band's classic "Live at the Fillmore East," and two Mystic Moods titles, "Highway One" and "Stormy Memories." □

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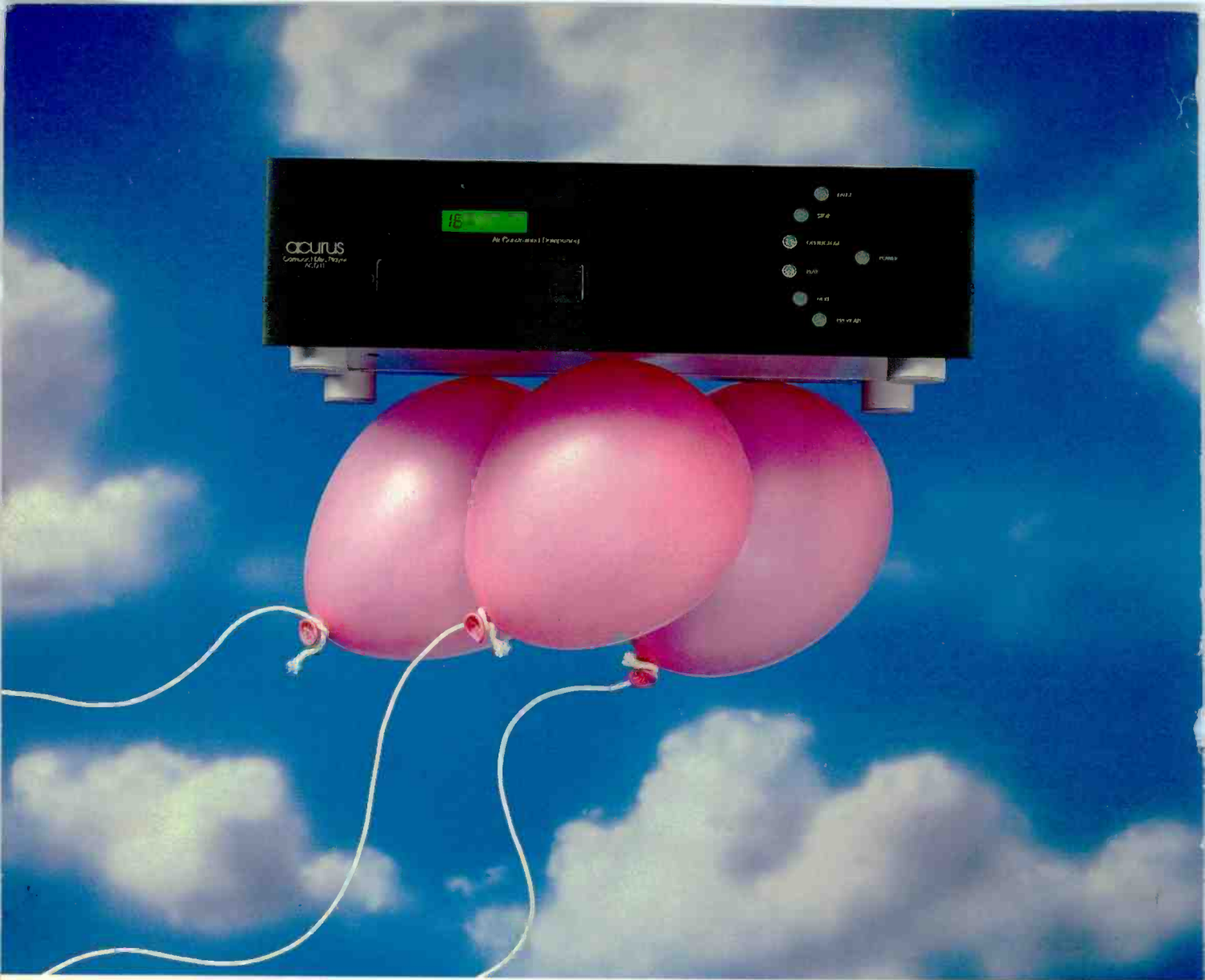
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ACD stands for Air Constrained Dampening, the highly advanced Acurus suspension system. At the core of our double isolation system is a newly developed microcellular elastomer which constrains the air within the cellular structure to dampen vibrations. The custom designed drive mechanism floats on two of these air suspension systems. The laser lens is made from fine optical glass versus the plastic lenses typically found in CD players. The clamping mechanism covers a far larger area of the disc than usual. This combination of technology yields a CD drive with unsurpassed laser focus and accuracy.

THE D/A CONVERTER

The advanced one bit digital to analog converter portion is mounted directly to the drive for the shortest possible signal path. This eliminates signal path induced jitter. As is typical of Acurus components the analog stage consists of a glass epoxy circuit board versus the paper boards found in most players. The resistors are 1% metal film and the capacitors are of tight tolerance poly composition. This creates a fully discrete analog stage at a level found only in costly external D/A converters. To protect your system from digital noise entering through the AC line a line filter is added to the ACD-11's power supply.

The Acurus ACD11. Now you can have Accuracy from the U.S. in a CD player.

MONDIAL DESIGNS LIMITED

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CIRCLE NO. 19 ON READER SERVICE CARD