Stereo Review

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HOME THEATER: WHERE DO ALL THE **SPEAKERS GO?**

6 CD REPAIR KITS AND HOW THEY WORK

TESTED: B&K A/V **Preamplifier**, Yamaha Tape Deck. Velodyne Speaker, And More

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Cover Pioneer's PD-F100 100-CD changer is one of the new jumbo options for couch potatoes and party people—and serious listeners. See "Ch-Ch-Changers!." page 60.

Photograph by Dan Wagner

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Stereo Review

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HDTV Update It's still at least two years away. What's the holdup? • by Michael Feazel

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Magazines, carousels. CD jukeboxes—today there's a changer for every system and budget • by Daniel Kumin

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Showstoppers

What was hot at this summer's Consumer Electronics Show • by Bob Ankosko

Best Recordings of the Month

Unusual rock from Neil Young and Crazy Horse, Hugh Wolff conducts Bartok, catharsis from Iain Matthews, and Solti conducts Mahler's "Das Lied von der Erde"



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BULLETIN



BACK TO THE FIFTIES

At Dolly Parton's theme park, Dollywood, in Pigeon Forge, Tennessee, construction has begun on a new area devoted to the foods, fads, fashions, and cars of the 1950's along with the music that launched rock-and-roll. Parton says, "I grew up in the Fifties and loved the music, clothes, and all the great fun from that time. I thought this would be the perfect theme for our newest expansion and a TV special on CBS. I guarantee that our new Fifties area is going to be the most fun that you can have in bobby socks!"

The new 7-acre Fifties area is scheduled for completion in April 1995. Its cost of \$6 million brings Parton's total investment in Dollywood to \$45 million since the park opened in 1986.

HAFLER LEAVING HOME

Citing "severe" competition and limited profit opportunities, Rockford Corp. says it will discontinue sales of its Hafler brand home components by early next year and concentrate instead on Hafler amplifers for the professional audio market. The Hafler brand, best known for power amps and preamps, was started by David Hafler in the 1970's. Rockford, based in Tempe, Arizona, says it will continue to provide parts and service for existing Hafler home components.

GERSHWIN'S GLORY

What do Larry Adler, Kate Bush, Cher, Elvis Costello, Peter Gabriel, Elton John, Jon Bon Jovi, Meatloaf, Sinéad O'Connor, Robert Palmer, Carly Simon, Lisa Stansfield, and Sting have in common? No, they're not on Frank Sinatra's "Son of Duets" album, but they and other noted performers are on a new Mercury recording of perennial hits by George Gershwin. Produced by George Martin, of Beatles fame, "The Glory of

MULTIMEDIA MATTERS

A third of all desktop computers will have CD-ROM drives by the end of 1996, according to Dataquest, a market-research firm based in San Jose, California. Dataquest predicts that 17.5 million CD-ROM drives will be sold this year, up from 9.7 million sold in 1993.... SelectWare Technologies of Livonia, Michigan, recently shipped its first "MusicROM" release, "Blues Perspectives," to record and computer-software stores. In addition to thirteen songs from the likes of Albert Collins and Buddy Guy playable on any CD player, the \$29.95 disc's opening track contains a multimedia reference guide to the blues, including album reviews, biographies, and interviews, playable on a CD-ROM drive connected to an IBM-compatible PC running Windows.

Gershwin" is scheduled for September release.

BRITISH CD PRICING

BY WILLIAM LIVINGSTONE

AND BOB ANKOSKO

Great Britain's Monopolies and Mergers Commission (MMC) has cleared record companies of the charge that they artificially inflate the price of CD's. While recognizing that a "complex monopoly" exists in favor of the five major companies that control 70 percent of record sales in England, the MMC concluded that CD's cost more in the U.K. than in the U.S. mainly because of "different tax arrangements" (CD prices in the U.K. include a 17.5-percent value-added tax, or VAT). The MMC's investigation was in response to a House of Commons committee report issued last year that condemned CD pricing polices and recommended cutting retail prices by £2.

MEDIA

The National Football League has announced that all 102 games of the 1994-1995 season will be broadcast on the Fox network in Dolby Surround. Individual broadcast sports events, such as the World Series and the Super Bowl, have used the Dolby technology, but this is the first time a complete season will be aired nationally in Dolby Surround.... Aimed at the youth market, Blender is a new pop-culture magazine in CD-ROM format scheduled to debut this fall. In addition to video interviews with pop trend setters, it will include snippets of new music recordings. Also promised are the e-mail addresses of celebrities. Price: \$15 an issue, \$99 for a year's subscription. Blender's e-mail address is Blender@Sonicnet.com, or write to 25 W. 39th St., #1103, New York. NY 10018.

AUDIO ANNIVERSARIES

A gala party celebrating Acoustic Research's fortieth anniversary is planned for late October at New York City's Grand Central Station. Speaker pioneers Ed Villchur, Henry Kloss, and Roy Allison are among those expected to attend. A limited number of invitations are being made available to the general public. Send requests to Acoustic Research, 535 Getty Ct., Building A, Benicia, CA 95842.... Also celebrating a major anniversary is Miller & Kreisel Sound Corp. (M&K Sound) of Culver City, California, which is twenty.

PERSONALITIES

The Recording Industry Association of America has certified as a Gold album "The Best of Reba McEntire (Mercury), which brings McEntire's Gold album total to fourteen, putting her in third place among female Gold album achievers, behind Barbra Streisand (thirty-one) and Linda Ronstadt (seventeen).... The superstar operatic tenor Placido Domingo will become artistic director of the Washington Opera Company in 1996.... The acclaimed American conductor Leonard Slatkin has been named to succeed Mstislav Rostropovich as music director of the National Symphony Orchestra.... Lorin Maazel has announced that he will give up his post as music director of the Pittsburgh Symphony in 1996.

FOR THE DISCRIMINATING MOVIE FAN.

Demolition Man	* 1199306
Beverly Hills Cop II	* 1239607
Beverly Hills Cop	* 1239003
Cat People (1982)	* 0211003
Falling Down	* 1134006
The Bear	* 0599308
Indochine	* 1188903
Manhattan Murder Mystery	* 1189505
On The Waterfront	0162503
A Room With A View	0361501
Runaway Train	1189406
Arsenic And Old Lace	0073502
The Sound Of Music	* 0003905

CLUB FAVORITES

Cliffhanger	* 1149301
The Firm	* 1154400
Rising Sun	1174804
Sleepiess in Seattle	* 1154905
Bram Stoker's Dracula	+ 1102904
Terminator 2:	
Judgment Day	+ 0233205
Top Gun	0426908
Unforgiven (1992)	* 1084003
Die Hard	• 0367607
Robotech 1 & 2	1146604

Coneheads	* 1179001
History Of The World: Part 1	* 0055707
Highlander	0382309
Judgment Night	* 1193101
Home Alone	* 0104208
Home Alone 2:	
Lost In New York	* 1104900
Hot Shots	0029108
Hot Shots Part Deux	1176809
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Sliver	* 1147008
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Pink Floyd: The Wall	* 0258004
Predator	* 0364901
Predator 2	* 0104307
The Slience Of The Lambs	* 0805309
Die Hard 2: Die Harder	* 0041806
Star Trek-The Motion Picture	* 0203505
Star Trek II-	
The Wrath Of Khan	* 0201301
Star Trek III-The	
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Star Trek VI-The	
Undiscovered Country	* 1001007



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Empire Strikes Back	* 0091009
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Midnight Express	* 0150003
Alien	0000208
Allens	0360909
Alien 3	* 1042506
Point Of No Return	* 1127109
Robin Hood:	
Prince Of Thieves	* 0976803
The Wizard Of Oz	0001404
Eric Clapton: Unplugged	1038405
Goodfellas	* 0969808
E.T.: The Extra-Terrestrial	* 0681106
Patriot Games	* 1051309
Lawnmower Man	1014505
Back To The Future	* 0211409
Back To The Future II	* 0921304
Back To The Future III	* 0497008
My Cousin Vinny	1033109
We're Back	* 1206903
Dave	* 1149400
Hard Target	* 1179605
Ghost	* 0826008
Scent Of A Woman	* 1121300



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My Life	* 1246305
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The Abyss	* 0881102
Balman (1989)	* 0642504
Batman Returns	1029909
Bugs Bunny Classics	0297705
Always	* 0921502
Chinatown	* 0202507
Fai And Away	* 1046507
The Empire Of The Sun	* 06332D6
A League Of Their Own	* 1078005
National Lampoon's	
Animal House	0211508
Field Of Dreams	0920306
Man Who Would Be King	* 0085803
Groundhog Day	* 1108406
Conan The Barbarian	* 0220509
Fried Green Tomatoes	1005404
Dragon: The Bruce Lee Story	* 1150705
Beetlejulce	0633008
Forbidden Planet	* 0844407
Caddyshack	0602300
Lethal Weapon	0630806
Lethal Weapon 2	* 0642702
Lethal Weapon 3	* 1051507



* 1242908 Ace Ventura: Pet Detective Sommersby 1120906 * 0847103 The Prince Of Tides **Eatal Attraction** 0439307 Big 0367409 Dangerous Liaisons 0638700 * 0151508 Tommy * 0255505 The Hunger 1238807 Orlando Single White Female 1061407 * 1102805 Howards End * 1071604 Sneakers 0607606 Dellverance 0559005 Backdraft * 0844605 Jaws The Color Purple * 0630103 Looney Tunes After Dark: Ghoul, Ghost and Goblin 1060607 0235002 Robocop Blazing Saddles 0001206 The Hunt For Red October 0825000 The Exorcist 0600304 Monty Python's The Meaning Of Life 0523902 The Haunting 0268607 Das Boot (subtitled) 1232800 * 1232503 Remains Of The Day **NEW RELEASES** Addams Family Values * 1232701 Batman: Mask Of The Phantasm + 1238906 Age Of Innocence 1207307 A Bronx Tale 1221506 Fearless * 1207109 The Good Son 1198803 The Man Without A Face 1190909 Much Ado About Nothing 1208701 Last Action Hero + 1154086 Wizards 0734905 BBlade Runner: * 1097906 The Director's Cut * 1105907

The Bodyguard Bridge On The River Kwai (Restored) 1143809 * 1188804 The Secret Garden (1993) The Last Of The * 1071406 Mohicans (1992) 2001: A Space * 0844308 Odyssey M. Butterfly 1207208 * 1221407 Visions Of Light A Perfect World 1237205 * 1077908 Under Siege * 1239201 Shadowlands

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LETTERS

CD Noise

The July articles by David Ranada ("Super CD's") and Michael Klasco ("Quiet!!!") draw attention to the wide gap between the theoretical and practical noise limits of CD reproduction. Mr. Ranada de-scribes a "huge difference" of 24 dB between the theoretical noise floors of 16- and 20-bit recordings. But the best domestic audio equipment provides a dynamic range of less than 100 dB, or 10 dB worse than a (good) 16-bit CD. So the noise-level reduction of a "super" CD cannot be "clearly audible" with any music under any listening conditions

According to data in Mr. Klasco's article, all intentional sound sources in a typical home, such as TV's and radios, must be silenced to obtain an ambient noise level in a "quiet" listening room of about 40 dB above the threshold of audibility. With a (deafening) peak output level of 110 dB, the dynamic range is only about 70 dB. By investing several thousand dollars in the soundproofing techniques he described, it may be possible to reduce the room ambient noise by as much as 10 dB. But the resulting noise level of 30 dB would still be audibly worse than that of the equipment and enormously worse than even a 16-bit CD. The investment would, however, also reduce the external audibility of the CD output by 10 dB.

Thus, "super" CD's will not improve the audible noise floor, and soundproofing may be more directly beneficial to the neighbors than to the person who invests in it!

> GEOFFREY CRASK Carlsbad, CA

David Ranada replies: The measurements in Mr. Klasco's article are of wideband sound level, which are useful for some purposes but not for evaluating the audibility of low-level noise. That is because background noise in homes tends to be predominantly low-frequency, whereas our hearing is most sensitive at high frequencies, in the vicinity of 4 kHz. So it is necessary to look at the spectrum of the noise, not just its total level. Louis Fielder of Dolby Labs has done just that and found that conventional 16-bit digital recording cannot reproduce the full dynamic range of live acoustic music without introducing audible noise or distortion in a quiet room or, more critically still, headphone listening.

The reason we are almost never aware of noise on CD's of most modern recordings is that the dynamic range of recorded music is rarely wide enough for the 16-bit noise floor to become unmasked. But theoretically, at least, the CD system can be made more transparent by the use of good 20- to

STEREO REVIEW OCTOBER 1994 8

16-bit conversion techniques, which need not increase disc prices.

The dynamic range of the best audio equipment, and even some mediocre stuff, is substantially wider than 100 dB.

Pro Logic Before EQ

n the July test report on the Audio Control C-101 Series III equalizer/analyzer, Julian Hirsch says not to connect it (or any equalizer) in front of a Dolby Pro Logic circuit. He also says such a component is typically installed through a tape-monitor loop. That is consistent with other articles I have read and with the instruction manual for my receiver. Question: Is the tape-monitor loop before or after the Dolby Pro Logic circuitrv? How about using a Tape 2 circuit for music only? JOHN W. ENISON Richmond, VA

Tape-monitor loops are normally ahead of the Dolby Pro Logic decoder. Your idea (if we're getting it correctly) is very sensible. however: Put an equalizer in your Tape 2 loop so that you can easily switch it in and out of the circuit depending on whether you're using the Pro Logic decoder or listening to unencoded music.

Onkyo Reverb

n the "Second Opinion" part of the August issue test report on the Onkyo TX-SV919THX A/V receiver, David Ranada sums up with the statement, "Powerful, accurate, and clean with music, ... [it] is the best A/V receiver I have ever tested." Earlier, however, he indicated that the receiver's "music-oriented processing modes" have artificial reverberation that cannot be turned off, and he said that "in every music mode the reverb was marked by a distinct coloration .

Let me get this straight: The Onkyo TX-SV919THX is a great A/V receiver, it's just not hi-fi, and it costs 200,000 pennies. If it colors the music, what's good about it?

RICHARD W. MCGINES N. Tonawanda, NY

No. the TX-SV919THX receiver is very definitely hi-fi. The review notes some deficiencies in its music-enhancement surround modes but goes on to point out that they were apparent only with some music, not all. Such problems are the rule, rather than the exception, in the music-enhancement modes commonly built into A/V receivers. That's unfortunate, but, like the ubiquitous "loudness" button, the enhancement modes (and their reverb) can always be turned off if you don't like the effect. There is no

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Graphic Error

Craig Stark's August test report on the Nakamichi DR-1 cassette deck says, "Because Dolby C somewhat reduces the treble pre-emphasis that is partly responsible for the [treble] saturation [at 0 dB], response from TDK MA extended all the way to 20 kHz (-2.8 dB)." But the accompanying record/playback frequency-response graph (which doesn't indicate whether noise reduction was enabled) seems to indicate that response with MA tape was down almost 4 dB at 20 kHz.

Also, I thought Dolby C increased high treble in recording, which could only lead to more saturation. The signal-to-noise ratio (S/N) figures in the report do indicate that metal tape was quieter, at least at a higher recording level, than the ferric or chrome samples, but what proportions of the S/N's represent hiss, bias noise, or modulation noise? NIGEL LITTLEJOHN New York, NY

Oops! We mislabeled the graph for the metal-tape response. The one shown is with Dolby C engaged, which gives -2.8 dB at 20 kHz; the curves for ferric and chrome tape are without noise reduction, and the one for metal tape with no noise reduction (not shown) is indeed very close to that for the ferric tape.

Dolby C incorporates what Dolby calls an antisaturation network, which reduces the recording level of high-level, extremely high-frequency signals, even when the noise-reduction system is boosting the middle and lower treble, to prevent tape saturation. That strategy improves high-frequency response with only a small impairment of the system's effectiveness. As for the SIN figures, they represent tape hiss predominantly and modulation noise, which is very program-dependent, essentially not at all.

Home Theater for Music?

s there any acoustic reason why a music enthusiast who watches little television or movies on TV should invest in a home theater amplifier and extra speakershonestly? STEPHEN MURATORE Chico, CA

If the amplifier or surround processor has good ambience-enhancement modes for music, you might find a multichannel setup beneficial. And eventually multichannel music recordings may become the norm (some are already being made in Dolby Surround). Otherwise, no.

Speaker Comparison Tests

in the measurements table in July's "Stand Up and Be Counted," why is the frequency-response variation figure ($\pm x$ dB) different for each of the six speakers? Doesn't that give one like the Advent Laureate an exaggerated bass extension? According to

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your graphs, at ±8 dB (like the Advent), the KEF O30 would go down to 45-48 Hz and the Paradigm 7se MkIII to 34-37 Hz!

SAM C. PARK Toronto, Ontario

The main point of the response listings in the table was not to compare low-frequency extension, but rather to indicate the amount of deviation in on-axis response over the major portion of each speaker's range. We could have used a consistent "window," such as $\pm 3 \, dB$, but then the high-frequency limits shown for some of the speakers would have been 2 or 3 kHz.

The Definitive Technology DR-7 and the Phase Technology 7T, two of the most impressively reviewed floor-standing loudspeakers in the \$500 to \$600 price that I've seen since the early 1980's, definitely should have been included in July's com-FRANK J. SALERNO parison tests. Lansdale, PA

They were excluded because they had been reviewed previously, in the December 1991 and June 1994 issues, respectively.

appreciate your use of a panel of listeners in the speaker comparison tests to compensate for the preferences of only one or two listeners, and especially your straightforward presentation of the way they voted. The measurement data are confusing, though. The table indicates that the low end for the Advent Laureate is 41 Hz but only 59 Hz for the Klipsch KG-3.5. If you look at the room-response graphs, however, the level produced by the Klipsch at 50 Hz appears to be slightly higher than that produced by the Advent!

Also, in describing the sound of the speakers at high volume levels, author Tom Nousaine said that the DCM TF-400 Two had "significant doubling and distortion when driven into extreme overload." Frankly, knowing how the speaker sounds when it is being abused is rather useless. What would be useful is knowing how loud it can play without its fidelity being degraded.

> THOMAS E. SLOCOMBE Orange, CA

One reason we printed frequency-response curves as well as the tabular data was to facilitate comparison of bass extension.

Correction

he September test report on the M&K S-90 satellite speaker did not reflect a recent price change. Current suggested retail prices are \$795 a pair (\$405 each) unshielded, \$875 a pair (\$445 each) with magnetic shielding.

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► POLK AUDIO Polk Audio's RM7000 home theater speaker system comprises a pair of 7-inch-tall two-way satellites, an 11-inch-wide center speaker, and a powered subwoofer with an 8-inch driver and a 65-watt amplifier. System bandwidth is given as 22 Hz

to 22 kHz. The magnetically shielded satellites and center speaker feature high-density polymer cabinets that look like stone. The satellites include wall brackets. Price: \$1,299. Polk Audio, Dept. SR, 5601 Metro Dr., Baltimore, MD 21215.

M&K SOUND

M&K's 21-inch-tall S-1C speaker uses two "transmission-line" dome tweeters, separated by a baffle-mounted foam strip to minimize coloration, and a push-pull dual-woofer configuration, said to improve efficiency and reduce distortion. Tonal balance can be adjusted by a trio of three-position toggle switches on the speaker's back panel. Frequency response is given as 77 Hz to 20 kHz ±2 dB. Available in oak or black oak. Price: \$1,395 a pair. M&K Sound, Dept. SR, 10391 Jefferson Blvd., Culver City, CA 90232. • Circle 121 on reader service card



🔺 JBL

JBL's SDP-1 Dolby Pro Logicbased digital surround-sound processor features five movie modes, including Home THX, three ambience settings, and six simulated concert-hall environments. It doubles as a line-level preamp with switching for four signal sources, three of them A/V. A large front-panel LCD window and onscreen graphics provide control feedback. One of the two supplied remotes is for setup, the other for everyday use. Price: \$3,200. JBL, Dept. SR, 80 Crossways Park W., Woodbury, NY 11797. • Circle 122 on reader service card

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A MONITOR AUDIO

Monitor Audio's Studio 2 speaker combines a 5¼-inch aluminum woofer and a 1-inch gold-anodized dome tweeter in a 10½-inch-tall vented cabinet. Frequency response is given as 60 Hz to 30 kHz ±3 dB and maximum power-handling capability as 150 watts. Price: \$1,199 a pair in black or oak veneer, \$1,399 in rosewood. Monitor Audio, Dept. SR, P.O. Box 1355, Buffalo, NY 14205. • Circle 124 on reader service card

V SEQUENCE DESIGN

Sequence Design's Model 20 speaker can be placed on the floor or hung on a wall or shelf. The 10 x 22-inch sealed cabinet, only 2¾ inches thick, houses a 5-inch woofer and 1-inch tweeter; a stand/bracket is included. Bandwidth is given as 55 Hz to 20 kHz. Available with black grille cloth and walnut or black endcaps, or with off-white grille and white or oak endcaps. Price: \$299 a pair. Sequence Design, Dept. SR, 145 Brandy Rd., Foster, Quebec JOE 1RO. • Circle 125 on reader service card

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V DENON

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Cello says its Encore line preamplifier is built with "the world's most advanced internal components." It features an anodized-silver faceplate, five line-level inputs (one balanced), five stereo outputs (one balanced, two recording), a fiftynine-step volume control, and three 1-dB-resolution output-level controls (left, right, and master). A mode control lets you reverse the left and right channels or send either channel's signal to both outputs. Price: \$8,600. A phono input for an MM or MC cartridge can be added for \$2,000. Cello, Dept. SR, 112 E. 71st St., New York, NY 10021. • Circle 128 on reader service card



ADS's Model 325is car speaker system comprises pairs of low-profile 5¼-inch woofers, 1-inch dome tweeters, and passive crossover modules. Each crossover has a three-position tweeter-level switch and an EQ switch. Frequency response is given as 50 Hz to 23 kHz ±3 dB, recommended amplifier power as 15 to 100 watts. Price: \$599. ADS, Dept. SR, One Progress Way, Wilmington, MA 01887. • Circle 129 on reader service card





PIONEER

No matter how hard the rain, sleet, or snow, Pioneer's omnidirectional CSL-300 (left, \$369) and CLS-250 (\$299) outdoor speakers are said to keep on playing. Both have a 6½-inch driver and are rated down to 50 Hz. The CLS-300, which includes an accent light, stands 17¼ inches tall, the CLS-250 15½ inches. Pioneer Electronics Technology, Dept. SR, 1800 W. Holt Ave., Pomona, CA 91768.

V SOUNDOLIER

Soundolier's ThundraPro 2 subwoofer is designed to be mounted between standard 16-inch-center floor or ceiling joists and vented by a floor register or a ceiling-speaker grille. The 13½ x 11 x 21½-inch ported cabinet, described as vibration-free, houses two 8-inch woofers. Frequency response is given as 50 to 170 Hz ±3 dB and maximum power handling as 100 watts continuous. Mounting hardware is included. Price: \$499. Atlas/Soundolier, Dept. SR, 1859 Intertech Dr., Fenton, MO 63026. • Circle 130 on reader service card





GENELEC >

Genelec is making its popular 12-inch-tall Model 1030A powered studio monitor available to consumers. The speaker is biamplified, delivering 80 watts to its 6½-inch woofer and 50 watts to its metal-dome tweeter, and rated down to 52 Hz. Finish is textured black. Price: \$2,198 a pair. Genelec, distributed by QMI, Dept. SR, 25 South St., Hopkinton, MA 01748.

• Circle 132 on reader service card



NEW PRODUCTS



< DESIGN ACOUSTICS

The two-way PS-88 speaker from Design Acoustics is magnetically shielded and packs an 8-inch woofer in a 13½-inchtall vented cabinet. The use of foam around its soft-dome tweeter is said to improve imaging. Finished in oak or black ash. Price: \$200. Design Acoustics, Division of Audio Potentials Corp., Dept. SR, 1920 Enterprise Parkway, Twinsburg, OH 44087. • Circle 133 on reader service card



Coustic's XM-5e three-way car crossover offers continuously variable cutoff points, 6- or 18-dB-per-octave high-pass slopes, a center-channel output with a defeatable high-pass filter, dual subwoofer outputs with a stereo/mono switch, and a

LAMM

Designed by a Russian audio engineer now living in the U.S., Lamm's M2.1 monoblock power amplifier is a hybrid incorporating one vacuum tube, a Class A/AB MOSFET output stage, and a switchable biasing circuit to maintain "optimal idle current" for loads between 1 and 16 ohms. The M2.1 is rated for 200 watts continuous output into 8 or 4 ohms with 0.3 percent THD, 400 watts into 2 ohms with 1 percent THD, and 600 watts into 1 ohm with 1 percent THD. It has a balanced XLR input and two RCA inputs. Price: \$5,690. Lamm Audio Laboratory, Dept. SR, 185 Ave. S, Brooklyn, NY 11223. • Circle 137 on reader service card



WCCORMACK

The Micro Line Drive preamplifier (shown, \$595), one of three distinctively styled McCormack Micros, measures 9½ x 3 x 9 inches. It has three inputs, one tape loop, two outputs, and dual volume controls, and it can be operated in passive mode (no

COAST

The polyester TC-2000, part of the Team Dennis Conner line, holds a personal CD or tape player or a camera and has a zippered accessory pocket. Price: \$24.95. Coast, Dept. SR, 200 Corporate Blvd. S., Yonkers, NY 10701. • Circle 135 on reader service card

bass EQ section that provides up

to 12 dB boost at any point between 25 and 250 Hz. A remote

subwoofer-level control is

Circle 134 on reader service card

included (shown). Price: \$250.

Coustic, Dept. SR, 4260 Charter St., Vernon, CA 90058-2596.

gain) or active mode (high, medium, or low gain). The series also includes the Micro Phono Drive (\$495) and Headphone Drive (\$595). McCormack Audio, Dept. SR, 542 N. Highway 101, Leucadia, CA 92024. • Circle 136 on reader service card





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Equalized Power

l recently bought a ten-band graphic equalizer. It works well, but during normal listening the level meters on my amplifier are consistently in the red. Is this normal, or am I damaging my equipment? MICHAEL D. ZOLLNER Mt. Laurel, NJ

I can only guess, but I suspect you are using the equalizer mainly to increase your system's bass output. Speakers that roll off in the lower frequencies do so because they are less sensitive in that range: A given amount of amplifier power results in less acoustic output than it would elsewhere in the audio band. You can compensate to some extent for that lack of bass by cranking up the bottom octaves of an equalizer. but the large increase in amplifier output won't produce much additional oomph. In other words, you may be severely overdriving your amplifier and in return getting only a modest increase in bass output. Even if you like the result, it's very likely to be accompanied by considerable distortion, unless your amplifier is powerful enough to handle the increased output without clipping. Ironically, if it is, you may be putting your speakers' voice coils at risk.

CD Snoozing

I often fall asleep with a CD still playing. I normally try to pick a selection that will end before the timer shuts off my receiver—it has a 45-minute timer that controls the switched outlet my CD player is plugged into—but that doesn't always work out. Could I damage my CD player if the receiver cuts off the power while a disc is still playing? CRAIG TANIKAWA Sacramento, CA

A Don't worry. Since nothing in your player touches the playing surface of a CD (digitized music data embedded in the disc is retrieved by an optical scanner), there's nothing to cause it damage. When the power goes off, the disc simply stops spinning. The player supports it around the hole in the middle, but otherwise the only thing in contact with a CD, playing or resting, is air.

Home Theater Checkup

I would like to make sure my home theater is set up properly. Is there any sort of VHS videotape designed to help consumers test and adjust their Dolby Pro Logic setups? HERMAN DAY Lomita, CA A Indeed there is. Dolby Laboratories has produced a VHS "Consumer Guide to Home Theatre" that contains clear explanations of the system, the setup options, and buying considerations. It includes a bunch of test signals, too. For more information or to order the tape, telephone 1-800-241-4115.

Beat Tape Recordings

When 1 make tapes from CD's or from FM, everything is fine, but when 1 tape from my turntable, the recorded tape has a distortion that sounds like waves or beats, a second or so apart, in which the treble or overall level fluctuates. When the signal is turned down, the distortion decreases. What is causing it? David HASSAN Los Angeles, CA

A It sounds like the problem is caused by warped records. Deformed vinyl discs can move up and down once per revolution; the frequency is so low that you can't hear it, but it is picked up by your phono cartridge and mixes with the desired signal. The warp signal, with superimposed audio, occasionally gets strong enough to be noticeable. If you're recording near the peak level, the signal doesn't have to rise very far to distort badly. You may be able to see the effect on your deck's meters, or by taking the grille off one of your speakers and watching the woofer cone move slowly in and out in step with the turntable's rotation.

Alien Dangers?

Please tell me what are the dangers, if any, of using speakers rated at a lower impedance than is recommended by an amplifier manufacturer. Will I shorten my amplifier's life? Smell ozone? Hear increased distortion? Will aliens come down from the sky and abduct me? ED MACKIE Burnsville, MN

A There may be no ill effects at all, but it depends on the design of the amplifier. For a given output voltage—and most amplifiers are constant-voltage devices—the lower the load impedance presented by the speaker to the amplifier's output stages, the higher the current they will have to produce. Some amplifiers are designed to handle very high currents, but most are not, so if things get out of hand because of too low an impedance, distortion is likely to rise, protection circuits can be triggered, and, in the worst cases (rare), the amplifier might be damaged.

All of that is complicated by the way im-

pedance is rated. Speaker manufacturers usually specify a single-digit "nominal impedance" of, say, 4 or 8 ohms, but that's only an average. Impedance varies with frequency, and there are likely to be parts of the spectrum where actual impedance is below spec. Moreover, the likelihood of such dips causing trouble is greater when the speakers' nominal impedance is lower than the impedance recommended for the amp.

On and Off Noises

My new power amplifier sounds fantastic, but when I turn it on, the woofers in my speakers are suddenly pulled inward and then slowly return to their resting positions. I have often heard that such surges can cause speaker damage. Is it something I should worry about?

> KEITH HEUBERGER Libertyville, IL

A I doubt it. Such phenomena are not all that uncommon, although many amplifiers have delay devices to keep turn-on surges from the speakers. I would be concerned if the woofer cones took more than a couple of seconds to return to their neutral positions. While offset, the voice coils have a lot of juice flowing through them and minimal heat-sinking from the magnet structure. If that were to go on for long, the voice coils could fry. But if they haven't fried yet, they probably won't.

Taping 78's

My wife has many old 78-rpm records, and she wants them copied to tape. What do I need to make low-noise transfers, and how do I go about making the best copies possible? FRANK SUTHERLAND Edgewood, NM

A First, understand that if they have been played often they will never be truly "low-noise." The 78-rpm record was an inherently noisy medium, primarily because of the materials that were used to make the discs, so it's unlikely you'll be able to get rid of all the grunge. But you *can* make them listenable, and taping them will insure against further deterioration.

Of course, you'll have to start with a turntable that includes the 78-rpm speed. That may not be easy, as there aren't very many of those around these days. Used-equipment ads or, better, garage sales may yield what you need. Then make sure you have a genuine 78-rpm stylus to play your records with; the geometry of the 78-rpm groove makes any later stylus useless.

(Pfanstiel Corp. of Waukegan, Illinois, is an excellent source for 78-rpm styli; if they don't stock one for your turntable, they may be able to custom-make it.)

Then, make sure you play the records in mono, even if it means bridging the left and right "hot" leads in the tonearm headshell. Just switching your amplifier or receiver to mono won't do it, as stereo will still be fed to the tape outputs. Back-to-back Y connectors between the receiver outputs and the tape inputs can achieve the same thing. Clean the records thoroughly and, if you have a graphic equalizer, knock off everything above about 6 to 8 kHz, and you should end up with tape dubs that sound reasonably like the originals.

Adding Ambience

My system consists of a stereo preamplifier, a power amplifier, and two sets of speakers connected to the amplifier's A and B terminals I would like to add DSP ambience enhancement and Dolby Surround capability. Although I have been told that the best method is to start over with all new equipment. I'm very satisfied with what I have, which is relatively new. What would I have to add to achieve the effects I want?

> **NEWTON OLIVEIRA** Erlangen, Germany

It seems unlikely that you will need to replace everything; the guiding principle I in multichannel systems is that the speakers have similar sonic characteristics, not that they be new or necessarily from the same manufacturer. Buying the speakers as a matched set will weigh things in the direction of tonal consistency, but that is not the only way of going about it.

As long as your four present speakers sound similar to one another, they could form the basis of your new surround system. Then you really need only an outboard surround processor with ambience-enhancement features and possibly a second stereo amplifier to power the surround speakers (some processors have built-in amps for this purpose). These days, virtually all outboard surround processors that include a DSP section for ambience synthesis also include a Dolby Pro Logic decoder for playback of Dolby Surround soundtracks. If you want a center-channel speaker (a good idea), you can add it and an amplifier to drive it (if the processor doesn't already have one built in). Or you could use one channel of a stereo amplifier to drive the center speaker and the other to drive the two surrounds in parallel. since the surround channel is mono-

Turntables Revisited

After dusting off my LP collection for the nth time this year, I've decided to take the plunge and add a turntable to my system. But I haven't paid much attention to record-playing developments for the past decade or so, and I'm not really sure what to look for anymore. Any suggestions?

MIKE MANESS APO Luxembourg

Not to worry: Turntables haven't changed all that much since you last owned one. As you will probably spend a relatively small amount of time listening to vinylyou did without it for ten years, after all-it makes little sense to blow a bundle on exotic operating features, which, in any case, are now few and far between. Modestly priced turntables can do everything you need in terms of playing your old records. Where I would suggest you spend the bulk of your money is on a really good phono cartridge, and perhaps a spare stylus or two.

against the day when you won't be able to get replacements. For that reason, it might be wise to stick to moving-magnet cartridges, as most moving-coil models don't have user-replaceable styli. That should also keep the costs down.

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

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HDTV Update

BY MICHAEL FEAZEL

hatever happened to high-definition TV (HDTV), that much-talked-about technology that we've been told will deliver movie-theater-quality pictures and sound into our homes in the "not-too-distant" future? The good news is that it's still very much alive and will undergo what is hoped will be final testing later this year. The bad news is that its future is still uncertain.

The best-case scenario suggests that HDTV broadcasting in the U.S. is at least two years away. And even if that timetable is met, no one is quite sure how HDTV will play out. Will broadcasters embrace the new system? Or will they balk at the steep investment required to make their facilities HDTV-capable? And assuming that a fair number of stations do go on-line with HDTV programming once the Federal Communications Commission finalizes a technical standard, how will the public react to widescreen sets that are expected to start at \$2,500?

HDTV has been a constantly receding target ever since the FCC formed an advisory committee in 1988 to choose a successor to the decades-old NTSC system. The initial goal was to select an HDTV standard by the fall of 1992. Then new digital technologies came along, making the heir apparent, Japan's analog MUSE system, obsolete overnight. Still, the FCC was confident that it could decide by June 1993.

After more delays, inconclusive testing of the various proposed systems, and the formation of a "Grand Alliance" of several proposals for HDTV last year, officials are still hoping that the new, combined digital system will go to final testing late this year. That would translate into a decision by the FCC's industry advisory panel by next spring and, if all went well, a final decision by the end of 1995.

But don't hold your breath. Even that timetable could be optimistic. Broadcasters are now working on a new, im-

proved HDTV system incorporating an expanded version of the Coded Orthogonal Frequency Division Multiplexing (COFDM) technology used in digital audio broadcasting, and that could lead to more delays. They're also trying to convince the FCC to allow them to use some of the extra bandwidth on HDTV channels for nonvideo services like delivering stock quotes to home computers. A fight over such ancillary services could push HDTV even further into the future.

Contributing to the delays in recent years was the decision to make HDTV computer-friendly. The FCC advisory committee decided last year to give the HDTV picture 1,080 lines of resolution rather than



Zenith's prototype high-definition TV (HDTV) set

1,035. (The higher number allows for square—as opposed to rectangular—pixels, which are easier for computers to handle.) The picture will boast twice as many lines of resolution as the current TV standard, eliminating much of the fuzziness that now plagues large-screen TV's.

Other features of the likely HDTV standard include a widescreen, 16:9 aspect ratio, similar to that of movie-theater screens and 35mm photos, and an interlaced/progressive scanning system, which automatically switches to the appropriate mode depending on the incoming TV signal. Interlaced scanning, used in the current TV system, creates pictures by alternately illuminating two separate fields of lines. Its advantage is that it requires half as much bandwidth for the same number of scanning lines. Progressive scanning, the system used in computer monitors, can potentially pro-

What's the holdup?

vide even better picture quality but requires a wider bandwidth because there's more data for each active picture line.

Another important feature of the probable HDTV standard—one that has been embraced by many fans of home theater—is the selection of Dolby's AC-3 six-channel sound system (the heart of the Dolby Stereo Digital cinema sound system used in a growing number of movie theaters). The AC-3 system outperformed the Philips Musicam system in tests largely because of software bugs in the Musicam prototype. Those bugs were later eliminated, resulting in a virtual performance tie between the two systems. The Grand Alliance opted to stick with Dolby's AC-3 even though the Musicam system is based on the MPEG-2 standard that's evolv-

ing as the worldwide standard for digital data compression. Musicam is now the "back-up" system for HDTV in the U.S. Since most of the world is likely to stick close to the MPEG-2 standard, the decision to move away from it here will almost certainly increase differences between the U.S. HDTV standard and those of the rest of the world, which may mean higher costs and problems in exporting U.S. HDTV programming.

elevision manufacturers are prepared to begin building HDTV sets almost immediately once the FCC adopts a standard, but it will be some time before there's much original broadcast programRhythm, Country & Blues. Featuring Al Green & Lyle Lovett, Aaron Neville & Trisha Aaron Neville & The Yearwood (MCA) 474•536

Reba McEntire--Read My Mind (MCA Nashville) 479-717 Peter Gabrlet—Shaking The Tree (Geffen) 415•968

The Police—Every Breath You Take—The Singles (A&M) 348-318 Linda Davis—Siloci For The Moon (Arista) 480-095 Linda Davis-Shoot

Anthrax-Live-The Island Years (Island/ Megaforce) (479-337 The Neville Brothers-Live On Planet Earth (A&M) 478+412 (A&m) Sammy Hagar— Unboxed (Geffen) 478•107

James Taylor-Live (Columbia 463-687/393-686



Bonnie Raitt-Longing Hearts (Capitol) 477.505

John Michael 473-157 Guns N' Roses-Use Your Illusion I (Geffen)

Ozzy Osbourne--No More Tears (Epic/ Associated) 428+128 Patty Loveless—Only What I Feel (Epic) 454+637

Bon Jovl-Keep The Faith (Jambco/Mercury) 451•310

ZZ Top-Grt. Hits (Warner Bros.) 438-010 The Robert Cray Band - Strong Persuader (Mercury) 426•189 Van Halen—For Unlaw-ful Carnal Knowledge (Warner Bros.) 420•273 Frente-Marvin The Album (Mammoth/ Atlantic) 483+693

Patti Labelle Gems (MCA) 486+605

...JUST IN

Vince Gill--When Love Finds You (MCA) 48 486+308

Alan Jackson-Who I Am (Arista) 486.233 Aaliyah—Age Ain't Nothing But A

Number (Blackground/Jive) 485-888

Beastie Boys-Ill Communication (Capitol) 3 484-808

Pam Tillis-Sweetheart's Dance (Arista) 479-683 John Scofleid & Pat Metheny—I Can See Your House From Here

477-570 (Blue Note) Johnny Cash-American Recordings (American) 477-489 Randy Travis-This Is

Randy Travis- Inc. Me (Warner Bros.) 477•463 Pat Benatar-Best

Shots (Chrysalis) 401-646



Frank Sinatra—Duets (Capitol) 471•615 Bryan Adams-So Fai So Good (A&M) 467-738

Eric Clapton-Unplugged (Reprise/Duck) 446+187

Back To Broadway (Columbia) 461-988

Eivis Costelio—Brutal Youth (Warner Bros.) 476•168

"8 Seconds"—Orig. Sndtrk, Featuring Reba McEntire, Vince Gill, etc. (MCA/Nashville) 475•483

Confederate Bailroad

Yanni-Live At The

Gerald Albright-

Joshua Kadison-

-Notorious (Atlantic) 475•194

Acropolis (Private Music) 475•178

Smooth (Atlantic) 475•152

Richard Marx—Paid Vacation (Capitol) 474•973

Painted Desert Serenade (SBK) 474•791

Neal McCoy-No Doubt About It (Atlantic) 474•619

Soundgarden-Super unknown (A&M)475+186

Brooks & Dunn-Hard Workln' Man (Arista) 454+025

Meat Puppets---Too High To Die (London) 474•221

Yanni-In My Time (Private Music) 458•018

Barbra Streisand-

Yearwood. etc. (Giant) 469-999 Hancock/Shorter/ Carter/Williams/Roney Tom Petty & The Heartbreakers—Grt. Hits (MCA) 474-411 "Threesome"—Org. -A Tribute To Miles Davis (Qwest) 476-382 Indigo Girls-Swamp Ophelia (Epic) 477•323 Nine Inch Naite-The Downward Spiral (TVT/ Interscope) 3 476•739

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The Black Crowes— Shake Your Money-maker (American) 462•184 Alice In Chains-Dirt (Columbia) 445•833 (Columbia) Nell Young-Unplugged (Penrise) 460-972 Little Texas-Big Time (Warner Bros.) 460-204 "Sleepless in Seattle" -Ong. Sndtrk. (Epic Soundtrax) 458•430

ABBA-Gold-Greatest Hits (Polydor) 458+406 Toby Keith-(Mercury/ Nashville) 458•315 4 Non Blondes

4 Non Blondes— Bigger, Better, Faster, More! (Interscope) 458•042 Big Head Todd And The Monsters—Sister Sweetly (Giant/Reprise 457-887

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Dwight Yoakam-This Time (Reprise) 456-913 White Zombie-La Sexorcisto (Geffen) E 442+079

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The People (Warner Bros.) 448•522 Bros.) CHAN

449-439

448-571

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447-995

George Stralt-Pure Country (MCA) 448•753

Alan Jackson—A Lot About Livin' (And A Little 'Bout Love) (Arista) 447•458

Faith Hill— Lans ... I Am (Wamer Bros.) 473•728 Michael Bolton-The One Thing (Columbia) 470-005

> Chant—The Benedictine Monks Of Benedicurie Intel Santo Domingo De Silos 477-067 (Angel) "Aladdin"—Orig. Sndtrk. (Watt Disney Records) 453•167

Stone Temple Pilots-Core (Atlantic) 453-043 Orig. Sndtrk. Featuring B-52's, Crash Test Dummies, Sade-Love Deluxe (Epic) Phil Collins-Serious Us3, etc. (MCA) Phil Collins-Serios Hits...Live (Atlantic) 448-944 480+178

(Uptown/MCA) 478-354

Vince Gill—I Still Believe In You (MCA) Jackson Browne-I'm Alive (Elektra) 469•783 "The Bodyguard"— Orig. Sndtrk. (Arista) 448-159 10,000 Maniacs—MTV Unplugged (Elektra) 469-775 Kenny G-Breathless Pantera-Far Beyond (Arista)

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Sire/Wamer, Pearl Jam-Vs. 4465•427 Aerosmith—Get A Grip (Geffen) 458+075 Sarah McLachlan-

Blind Melon

(Capitol)

Fumbling Towards Ecstasy (Arista) 473-389

NAME: Chris McAdams. **PROFILE:** Furniture Designer.



e nesidilei	(Polydor) 471-011	The Cars' Greatest Hits (Elektra) 339+903
	"Dazed And Confused"-Orig. Sndtrk. (Giant) 468-546	The Best Of Kansas ® (CBS Assoc.) 327•742
	The Very Best Of Yes (Atlantic) 465+971	The Best Of Blondle (Chrysalis) 311•811
day my dad	Jimi Hendrix—The Ultimate Experience (MCA) 458•034	Creedence Clearwater Revival—Chronicle-20 Grt. Hits (Fantasy) 308-049
ost normal	The Allman Brothers Band—A Decade Of Hits 1969-79 (Polydor) 430•439	
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n wagons and	(Verve) 423•772 The Moody Blues—	(MCA) 480•202
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to: they dont	John Lennon Collec- tion (Capitol) 405+308	Best Of The Doobles (Warner Bros.) 291-278
at three in	Lynyrd Skynyrd Skynyrd's Innyrds/Their Grt. Hits (MCA) 381•129	The Steve Miller Band Grt. Hits 1974-78 (Capitol) 290+171
eat cheese	Grateful Dead–Skele- tons From The Closet (Warner Bros.) 378•406	Van Halen (Warner Bros.) 286•807 Meat Loaf—Bat Out Of
breakfast.	Fleetwood Mac-Grt. Hits (Warner Bros.)	Hell (Epic) 279•133
🕨 DI GANIADE,	375•782	Boston (Epic) 269•209 Jim Croce
sleep	Journey's Greatest Hits (Columbia) 375•279 Steppenwolf—16 Grt.	Photographs & Memories: Grt. Hits (Saja) 246+868
	Hits (MCA) 372+425	Santana's Grt. Hits (Columbia) 244+459
noon 🔪	Marvin Gaye's Grt. Hits (Motown) 367•565 Styx—Classics, Vol. 15	Carpenters—The Singles 1969-73 (A&M) 236+885
	(A&M) 364+448 Best Of The Doors (El-	Janis Joplin's Grt. Hits
	ektra) 357+616/397+612	(Columbia) 231-670 Simon & Garfunkel's
	The Mamas & The Papas—16 Of Their Greatest Hits (MCA)	Greatest Hits (Columbia) 219-477
and the second second	348+623 Bad Company—10	Bob Dylan's Grt. Hits (Columbia) 138+586
	From 6 (Atlantic) 341•313	A Decade Of Steely Dan (MCA) 341+073
a second	Meat Loaf—Bat Out Of Hell II: Back Into Hell (MCA) 458•232	Pretenders—Last Of The Independents (Sire/ Warner Bros.) 480-285
	Tina Turner—Simply The Best (Capitol) 433•342	Chicago®—Grt. Hits 1982-89 (Reprise) 401•156
	Enya-Watermark (Reprise) 431+403	Aerosmith-Pump (Geffen) 388+009

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340-315

423-186

The Draw (Capitol)

Eagles Grt. Hits Jethro Tull—Original (Elektra) 287•003 Masters (Chrysalis)

Elton John-Grt. Hits (Polydor) 471-011



All-4-One (Atlantic)

U2—Achtung Baby 431•213 Bryan Adams---Waking Up The Neighbours (A&M) 429-779 Cheap Trick-Grt. Hits (Epic) 428+656 (Epic) Spin Doctors-Pocket

Red Hot Chili Peppers —Blood Sugar Sex Magik (Warner Bros.) [] 428•367 (Island) (Atlantic)

Dancers Union (Columbia) Toad The Wet Sprocket-Dulcinea (Columbia) 482

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Alice In Chains—Jar Of Flies (Columbia) 471+979

Counting Crows— August And Everything After (DGC) 467-944 Billy Joek®-Grt.Hits. Soul Asylum-Grave

Jimmy Buffett-Songs You Know By Heart (MCA) 339-911 Bob Marley & The Wallers-Legend (Tuff Gong/Island) 337•857 Vols.1 & 2 (Columbia) 336•396/396•390 445+510 482-166

on Saturdays. Of course, he also thinks The Who is part of an old Abbott and Costello routine, Red Hot Chili

Peppers are used for making tacos and Columbia House must be where they grind those tasty coffee beans. 🤊



"Maverick"-Orig Sndtrk. Featuring Clint Black, Vince Gill, more. (Atlantic Nashville) 484-139 David Sanborn-Hearsay (Elektra) 481.768 "The Flintstones"-

R&B, DANCE, RAP

Outkast-Southern-(LaFace) C 480-103

MTV Party To Go, Vol. 4. Featuring The Red Hot Chill Peppers, TLC, En Vogue, etc. (Tommy Boy) 478+628 MTV Party To Go, Vol.

3. Featuring Jodeci, Boyz II Men, etc. (Tommy Boy) 478-610 The Brand New

Heavles-Brother Siste (Delicious Vinyl)478+305

The Best Of The Village People (Casabianca) 478-131

Angela Winbush (Elektra) 477•786 CeCe Peniston-

Thought 'Ya Knew (A&M) 467•860

NAS-Illmatic (Serchlite/Cl) 477-166 I. KILLY 17PLACE



R. Kelly-12-Play (Jive)

Freddie Jackson-Grt. Hits (Capitol) 474-940 K7--Swing Batta Swing (Tommy Boy) 474•866

Crooklyn"-Ong. ndtrk. (MCA) 483-685 Paul Simon

Graceland (Wamer Bros) 345-751 Blackhawk 473-397 (Arista) Mariah Carey-Music Box (Columbia) 465-435

Jimmy Buffett— Fruitcakes (MCA) 480-491 Danzig-Thrall

Deamonsweatlive (American) 3 462-333

Patra-Queen Of The Pack (Epic) 3 474-809 Zhane'-Pronounced

Zhane'-Prohosing Jah-Nay (Motown) 474-296 Hammer—The Funky Headhunter (Giant/ Reprise) 474•262 All Men Are Brothers: A Tribute To Curtis Mayfield—Various

Jodeci---Diary Of A Mad Band (Uptown/ MCA) 473•116

(Arista)

Snoop Doggy Dogg-Doggystyle (Death Row/ Interscope) 3 465•355 Artists (Warner Bros.) 474-155 Babylace-For The Babylace For Cool In You (Epic) 464-222 -Grt Aretha Franklin-Grt. Hits (Arista) 473-371

Tony Toni Toné—Sons Of Soul (Mercury) 463*679

Salt-N-Pepa-Very

Prince-The Hits 2 (Paisley Park) (2) 466-631

Prince-The Hits 1 (Paisley Park) 466+623

467-837

438-184

Necessary (Next

Plateau/London)

En Vogue-Funky Divas (eastwest) 435-750 Gloria Estefan-Mi Tierra (Epic) 458-497 Domino (Rai/DelJam/ Chaos/Columbia) 3 472•225 Madonna-Erotica (Maverick/Sire/Warner) 453-555

Brian McKnight 442•236 Queen Latifah-Black Reign (Motown) 471-466 Jon Secada (SBK)

Haddaway 471-409 Michael Jackson Michael Jackson Dangerous (Epic) 433-920 Us3—Hand On The Torch (Blue Note) 471-342 Boyz II Men-Cooley-

Shaquille O'Neal-Shaq Diesel (Jive) 470+427 halmony (Motown) 424-754 high Xscape-Hummin Comin At Cha' (So So Def/Columbia) 469•981

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Janet Jackson-Rhythm Nation 1814 (A&M) 388+918

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STATE OF THE ART

ming to watch. Broadcasters had hoped to use the 1996 Summer Olympics in Atlanta as a showcase to spark consumer interest in HDTV, but they have since decided that there won't be enough HDTV cameras and videotape recorders available by then.

On the bright side, there's plenty of existing programming that can easily be converted into the HDTV format. Virtually all color movies can be converted almost overnight, making it likely that cable movie channels like HBO and Showtime will be the first to market with HDTV programming.

Viewers won't have to wait for HDTV broadcasting to get significant improvements in TV picture quality, though. Digital TV is already available in many parts of the U.S. via the direct broadcast Digital Satellite System (DSS) introduced in June by RCA, the DirecTV division of GM Hughes Electronics, and the United States Satellite Broadcasting (USSB) division of Hubbard Broadcasting. Homes equipped with 18-inch satellite dishes and TV-top satellite receiver/ decoders (\$699-\$899) can receive the improved TV signal by signing up for a cable-TV-like programming package and paying monthly subscription fees to a service provider, DirecTV or USSB. A handful of cable-TV systems also have begun delivering digital TV, but they're mostly in rural areas. Over time, most cable systems are likely to follow suit.

Converting an analog NTSC TV signal into a digital format eliminates many annoying picture artifacts (such as straight lines that appear jagged and inaccurate color rendition), and compression enables the near studio-quality video to be delivered to existing TV sets. Consumer studies indicate that any picture quality lost through compression is virtually unnoticeable and completely overwhelmed by the improvements made possible by digital transmission. The picture quality of digital NTSC is so good, at least on TV sets with screens 25 inches and smaller, that the difference between true HDTV and digital NTSC pictures is barely discernible.

Even when the FCC adopts a fullfledged HDTV standard, there's no guarantee that every TV station will make the multimillion-dollar investment necessary to convert to HDTV. Estimates on how many stations will convert range from 40 percent to nearly 100 percent. The FCC's chief engineer, Thomas Stanley, thinks that 40 percent will convert to HDTV within fifteen years after the standard is set.

Broadcasters will have three years to apply to the FCC for an HDTV license, then another three years to actually install HDTV equipment. Stations in large, competitive markets are expected to move much more quickly than those in smaller markets, but experts believe that even if the current FCC timetable is met, the first HDTV stations won't be up and running until late 1996 at the earliest.

If the demonstrations of prototype HDTV systems are any indication, the

HDTV has been a receding target ever since 1988, when the FCC decided to choose a successor to the decadesold NTSC system.

pictures will be terrific. Even blown up on screens measuring dozens of feet diagonally, HDTV images are remarkably sharp and have virtually no annoying artifacts.

But will Americans run out and buy HDTV sets when they become available? The FCC advisory committee estimates that initial prices will be steep: A 34-inch directview (tube-type) HDTV set will sell for about \$2,500 and a 56-inch projection set for about \$3,800, or \$500 to \$1.000 more than current topflight NTSC sets of the same size.

Prices are likely to come down over time, just as the prices of other consumer electronics innovations have over the years. But the drop isn't likely to be as precipitate as it was for, say, CD players and VCR's. Research and development expenses represented a far higher percentage of the initial prices of those products than they are expected to in the pricing of HDTV sets.

Like current TV's, HDTV sets will be available initially in two varieties. large direct-view tube sets, up to about 36 inches (diagonal), and larger projection sets. Although set makers predict that they'll eventually introduce smaller HDTV sets, down to the 11- to 19-inch sizes, early models will be almost exclusively large-screen sets, both because manufacturers' profits are higher on big sets and because HDTV is a natural for large screens.

One problem will be the sheer size of the tube-type HDTV sets, which are expected to be 3 to 4 feet deep, making it almost impossible to fit them through many doorways. Their bulky presence is also likely to be unpopular among decor-minded domestic partners. While 1-inch-thick flat-panel screens, including liquid crystal displays (LCD), could solve those problems, reliable large LCD panels are still years away. The U.S. Defense Department, for example, began handing out multimillion dollar grants to encourage development of large LCD's just this year.

Jerry Pearlman, chairman of Zenith, recently predicted that HDTV sets would be in 1 percent of all U.S. households within two years of introduction, a penetration rate far faster than those of any previous consumer electronics products and twice as fast as the rate for color TV's and VCR's. In contrast, a recent survey conducted by the Media Lab at Massachusetts Institute of Technology found that only 5 percent of Americans were willing to pay even \$500 more for an HDTV set than for a current-generation set.

Manufacturers are counting on the so-called "early adopters," those who were the first in their neighborhood to buy CD players, to jump-start HDTV by making it a status product. Some research studies, however, indicate that most consumers don't believe that the improvement in picture quality provided by HDTV will be nearly as significant as the jump from blackand-white to color TV. Moreover, the full extent of HDTV's quality improvement is apparent only on TV screens that are at least 30 inches diagonal-and relatively few households have TV's that large.

Such concerns have caused many to question whether HDTV will ever dominate TV viewing. That, in turn, lessens the incentive for broadcasters to invest in HDTV equipment and programming. And without ample HDTV programming, people won't buy HDTV sets, creating a classic chickenor-egg scenario that may make investing in HDTV a risky business.

Michael Feazel, senior editor of the industry newsletter Television Digest, has been covering HDTV since 1988.



TECH TALK

What's an Audio Review For?

s I see it, the task of a reviewer is to provide a reader with information that might be useful in making a product choice. I use the term "product" loosely, since what is reviewed need not be a physical object; it might be a novel, a play, a musical composition or performance, the driving characteristics of an automobile, and so forth. In most cases, the review is purely subjective—the personal opinion of the reviewer's judgment, and there can be great differences in individual perceptions of a reviewed "product."

Physical objects such as cars or hi-fi components are another matter. Their characteristics are subject to measurement, to a greater or lesser degree, and (at least in theory) can be verified by anyone possessing the necessary equipment and skills.

There are some qualities that can be measured (more or less) that may be related to purely personal criteria of "quality" or "goodness" for the overall product. The cornering characteristics or acceleration of an automobile can be *measured*, and they can also be *felt* through the driver's contact with the seat, steering wheel, and so forth. Automobile reviewers have their own subjective criteria for rating these qualities, and readers of their reviews have a fairly good idea of what each review attempts to convey. After all, we can all relate to acceleration (whether straight ahead or in cornering).

Although an audio reviewer faces some of the same problems, there are major differences. Most electronic components (amplifiers, tuners, and so forth) have a single input (an audio- or radiofrequency voltage) and a single output whose waveform is supposed to correspond to the input signal in some specific and well-understood way. Moreover, technology has advanced to the point where most such components with pretensions to high fidelity do whatever they are supposed to do extremely well as long as they are operating within their design limits. For example, although no amplifier is "perfect" (with its inputs and outputs *absolutely* identical except for amplitude), one that is functioning properly with flat frequency response over the audio range and sufficiently low noise and distortion is unlikely to alter the sound of a music recording appreciably, or in most cases even detectably, when operated within its linear power range.

Does that mean there are *no* differences between amplifiers? Not at all—but those that may exist, sonic or otherwise, can always be explained by competent laboratory measurements. In fact, the most significant performance differences between good electronic audio components are usually related to the bounds within which they can be expected to remain accurate reproducers—how much power an amplifier can deliver to a loudspeaker without overloading, for example. Such characteristics are most readily detected and most easily described by means of laboratory measurements.

But what about the loudspeaker—one of the most important components of your system? Here measurements face grave difficulty. Unlike an amplifier, with its single, known input signal and the cor-

Remember one thing about an expert opinion from an audio reviewer—it is just that, an opinion.

responding single, easily measurable output signal, a speaker produces an infinite number of different (though similar, one hopes) outputs simultaneously from a single input! Not only that, but each of those outputs is hugely affected (not necessarily in the same way as the others) by the room's dimensions and acoustic properties, the placement and orientations of the speakers, and the location of the listener. Finally, there is the fact that each listener's unique hearing system and brain together determine what he "hears" from the totality of sound reaching his ears.

If you think I am saying that speaker performance is essentially unmeasurable

(in the sense that one thinks of measuring the performance of the electronic components in a system), you have received my message loud and clear.

To be sure, we do make measurements in an attempt to identify and quantify some of the properties of a speaker. The measurements serve (when all goes well) to confirm certain sonic characteristics that may have appeared in listening tests or to draw our attention to some other distinctive quality. I spend many hours listening to music during speaker tests, whenever possible comparing the speaker under test with a comparable competitive model. Almost every speaker sounds its best with certain recordings. It is equally likely that with other program material some other speaker would prove superior (in your own judgment, which is all that finally matters).

Loudspeakers almost always sound distinctly different from each other, even when their response curves appear similar. Consequently, a choice between speakers should never be based on a single hearing or on the playback of a single recording. And the final choice must suit you, not a reviewer or "expert."

There is something else to remember about an "expert" opinion from a reviewer. It is just that, opinion, not necessarily fact. There can be a considerable difference between the two. I present my measurements as facts (under the stated test conditions), and I stand by those statements. My opinions are another matter. You may disagree with them strongly (please, not violently!), but I suggest that you look at the facts, listen for yourself, and, by all means, make up your own mind. In particular, don't let anyone tell you that you should be hearing something that you simply don't. Maybe it is really there for the other fellow, but if you don't hear it, it is not there for you.

The speaker (or the recording, for that matter) has yet to be made that won't alter the original signal to some audible degree. Some will be better than others, but none will be perfect. So don't expect your hi-fi system, no matter how expensive or elaborate, to duplicate the sound of live music—it's not going to happen. If that is the sound you crave, do as I do: Go to concerts regularly and hear the real thing. Then go home and enjoy your hi-fi system for what it is—a superb and affordable way to bring your favorite music into your home.

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USER'S REPORT



Energy Home Theater Reference Speakers DAVID RANADA . TECHNICAL EDITOR

rom Canada comes Energy's première entry into the home theater speaker market, its Home Theater Reference system. The system consists of four different speakers, each available separately (you get no price break by buying them in combination).

The RVS-1 left and right mainchannel speakers (\$700 a pair) and the RVS-2 center-channel speaker (\$350 each) are essentially identical except for their preferred orientations-vertical for the RVS-1, horizontal for the RVS-2. Each contains a 1-inch fluidcooled soft-dome tweeter crossed over at 2.5 kHz to two 5¹/₄-inch moldedpolypropylene cone woofers operating in a dual-vent enclosure measuring 81/4 x 19 x 11³/₄ inches. Those dimensions are width, height, and depth for the RVS-1, but height, width, and depth for the RVS-2. The rated sensitivity for both models is 88 dB sound-pressure level (SPL) with a 2.83-volt input (equivalent to 1 watt into 8 ohms), while impedance is given as 6 ohms nominal, 4 ohms minimum. Recommended amplifier power is 25 to 175 watts per channel. Dual multiway binding posts are located on the speakers' rear panels. The cabinets are finished in a high-gloss black on all surfaces, even beneath the removable front grilles, except the top and bottom of the RVS-1 and the ends of the RVS-2, which are covered in what appears to be black grille cloth. Both speakers are magnetically shielded.

Because their vents are on their rear panels, the RVS-1 and RVS-2 should not be placed directly against a wall (or built into one). I found that the RVS-1's sounded best when they were located at least a couple of feet away from all walls and at least 21 inches above the floor (so that the centrally located tweeters are close to ear level). Energy, not surprisingly, offers 21inch metal stands (SST-21, \$120 a pair) that fit nicely under the RVS-1's. The RVS-1's are slightly beamy in the vertical plane, so do not judge the sound of these speakers in a showroom if the front units are not close to ear level while you're listening.

Energy recommends placing the RVS-2 center-channel speaker above or below a TV screen, as close as possible to ear level. I got good resultswithout an emphasized lower midrange due to reinforcement by the screen-by putting the RVS-2 on a low stand in front of the TV.

Like many other surround speakers, the Energy RVSS (\$550 a pair) is a quasi-dipole, but the company says it obtains unusually good low-frequency reproduction by operating it in "bipole" mode, with the drivers in phase with each other rather than out of phase, from 400 Hz down (though in that frequency range a bipole really has an essentially omnidirectional radiation pattern). Each RVSS speaker has two fluid-cooled 3/4-inch softdome tweeters crossed over at 2.5 kHz to two 5¹/₄-inch polypropylene-cone woofers in a small, dual-port hexagonal enclosure measuring 101/4 x 10 x $8\frac{1}{4}$ inches and weighing just a little more than 13 pounds. Instructions and brackets for wall-mounting the surrounds are provided. The angling of the RVSS enclosures enables them to be mounted in room corners without cutting off their output.

The rated impedance of the RVSS surround speaker is the same as for the RVS-1 and RVS-2, but its sensitivity is given as 86 dB SPL. Recommended amplifier power is 15 to 125 watts. The enclosure is completely covered with grille cloth, which is available in either black or white.

Energy makes no definitive recommendations for placing the surrounds beyond the usual one of aiming the "null" of the dipole radiation pattern at the listener. The manual did illustrate side (rather than rear) placement, a suggestion we followed, placing the speakers about 8 feet up the walls on either side of the listening position.

Each AS-180 subwoofer (\$750) contains a single 12-inch driver in a vented, 56-pound enclosure measuring 163/4 x 18 x 183/4 inches. Each enclosure contains a single-channel subwoofer amplifier, which has unusually high power ratings (180 watts continuous, 720 watts peak), and a dual-channel active crossover. The subwoofer can be connected to the system in three different ways, which I will call Modes A, B, and C.

Mode A is the simplest: Connect one AS-180 in parallel with both left and right main speakers. To do that you run a pair of speaker cables either from the amplifier's main left and right speaker outputs or from the main speakers themselves to spring connectors on the back of the subwoofer. This kind of connection draws hardly any current, so thin, inexpensive cables will suffice. In this mode the crossover operates only as a low-pass 3


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Offer good through 12/31/1994. ©1994 Sony Electronics Inc. Reproduction in whole or in part witbout permission is prohibited. All rights reserved. Sony and MiniDisc logos are trademarks of Sony. filter, removing high frequencies from the signal and feeding only the lows, summed to mono, into the AS-180's amplifier. The low-pass crossover point can be varied in all three modes between 50 and 150 Hz.

Mode B is a line-level version of Mode A: Run a regular stereo cable from a suitable stereo line-level amplifier or surround-processor output (one subject to a master volume control) to input jacks on the subwoofer. You can also use this mode if your signal source has a dedicated line-level subwoofer output. If the signal from your source's subwoofer output has already passed through a crossover, you should "open up" the AS-180's builtin crossover by turning its frequency control up to 150 Hz, at least at first.

Although the most complex, Mode C is perhaps the best: You run a stereo signal into the subwoofer as in Mode B, but you also run a stereo cable from the subwoofer crossover's line-level outputs back to your amplifier or receiver. The returned signals have been high-pass filtered by the AS-180's

crossover, meaning that the low frequencies the subwoofer reproduces have been removed (starting at 90 Hz and rolling off below that frequency at 18 dB per octave, ideal characteristics for the RVS-1, as might be expected). Because in Mode C the main speakers don't have to reproduce the lowest frequencies, they can play louder without objectionable distortion from low-frequency overload. That is one of the greatest benefits of using separate powered woofers, and it cannot be obtained if Mode A is used. It can be obtained with Mode B. but only if your signal source has main-speaker highpass filtering as well as a dedicated subwoofer output.

The "loopback" hookup of Mode C is most easily managed with components that have pre-out/main-in connections or in systems having separate power amplifiers. It is important that the loopback occur *after* surround decoding in the signal chain; otherwise it will make a mess of the decoder's sound steering. Since the crossovers and woofer amplifiers are in the woofer enclosures and not in a separate box, using Mode C will result in lots of power, signal, and speaker cables running around your listening room.

If Mode C is used, you should set your surround decoder's "surround mode" or "center channel" control to "normal" or "small speaker" so that lows that would normally be steered into the center are shunted instead to left and right and thus into the subwoofer. Also, you should switch out any crossover filtering performed elsewhere in your system.

All the amplifier connections and controls of the AS-180 are on the back. The controls include power on/off, subwoofer volume, low-pass crossover frequency, a subwoofer phase-invert switch, and a switch that boosts the upper frequencies of the subwoofer output for "extra bass impact" that "will keep you on the edge of your seat, feeling every emotion," as the product literature puts it. The connections will also prevent you from backing the subwoofer flush against a wall—just as well given that

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I've taken so much trouble explaining the hookup and setup options for two reasons. First, many of these points are poorly explained or ignored altogether in the manual for the front and surround speakers. And the subwoofer's manual offers only the vaguest recommendations about placement and adjustment. I used a spectrum analyzer and microphone during setup and ended up with the subwoofer in a corner, contrary to the manufacturer's recommendations.

The second reason I've presented so many details on setup is far more positive: Once the Energy speakers were connected properly, placed well, and adjusted for proper bass response, they revealed themselves to be among the best speakers intended for both music and soundtrack playback that I've heard. In music playback, an acid test for any speaker, the basic tonal balance was toward accuracy and low coloration. The RVS-1's measured onethird-octave on-axis response showed a slight downward tilt from lows to highs, with a wide but very shallow dip superimposed at around 3 kHz. At times I thought I could detect those traits as a slight lack of brilliance and presence, but then I'd change to different music and the highs would be there in abundance. In any case, the speakers' characteristics portrayed fairly the differences in tonal balance among the hundred or so music tracks I played: Bad recordings sounded bad, good ones good.

Image precision and stage depth were very good in both two-channel and surround-sound playback. The system's dynamic range was excellent: Background noise from the subwoofer electronics was very low, and the Mode C hookup, in particular, was capable of delivering very high sound levels and hefty amounts of low bass with no sense of strain. Specially constructed test tones revealed the relatively extended low-frequency response of the RVSS surround speakers. But the difference between them and smaller quasi-dipole surrounds was not particularly audible with real soundtracks because most of the lows came out of the subwoofer. The extended bottom end of the surrounds could be useful with good music-oriented ambience enhancement.

If you are more into music than movies, you might still consider getting one or two AS-180 subwoofers and a pair of RVS-1's as an attractive alternative to a pair of single-enclosure speakers at the same price. Energy's nearly identical AS-90 subwoofer might even be a better deal at \$550 each, with the minor penalty of 3 dB lower maximum output.

You probably can't go wrong with any configuration of speakers drawn from Energy's Reference Home Theater System. They were a joy to listen to with both soundtracks and music. \Box

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B&K AVP2000 Audio/Video Preamplifier DAVID RANADA • TECHNICAL EDITOR

n the old days-around ten years ago-only big electronics companies could afford the production costs associated with microprocessor-controlled audio equipment. Even then, a component with an internal computer was rare. It's a measure of the sophistication of today's integrated-circuit designs that a small and young American electronics company such as B&K Components (no relation to the Bruel & Kjaer of microphone and test-equipment fame) can produce such a product. And that product, the AVP2000 audio/video preamplifier, takes full advantage of its onboard microprocessor.

For instance, the AVP2000 can independently control two sound systems installed in different rooms. The preamp has two sets of outputs, Zone 1 (main room or group of rooms) and Zone 2 (second room or group of rooms), and the audio and video input sources (which can be different), volume, and channel balance can be set separately for each zone. Adjustments made to one zone will not affect signals sent to the other.

The preamp also has eight memory presets in which you can store a complete set of those adjustments, plus source selection, volume, balance, and muting, for both zones, enabling you to go instantly to a particular setup at the touch of a button. In addition, each preset will record the current brightness (off, dim, or bright) of the front panel's sixteen-character fluorescent display and, for Zone 1 only, the settings of the tape-monitor loop and the FX (signal-processor) loop. You can also name the presets (the manual gives MON FOOTBALL as an example); you can even rename the inputs if you like.

While renaming of inputs is a function available in some other components, the AVP2000 has one feature that is, as far as I know, unique: It can be made to respond to commands from practically any other component's infrared remote control. There is a special display-menu sequence for

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substituting "foreign" commands for those of its own remote control. This feature can be handy if you lose or break the AVP2000's handset or, more important, if you want to use a multicomponent remote control of some sort instead of the AVP2000's own remote.

One last unusual function is Control Out, which turns on a back-panel DC signal (12 volts at 15 milliamperes) that can be used to activate an external system or component (to drop down a video screen, for example). The desired status of the control signal is also memorized with each preset.

Other rear-panel facilities include connections for a CD player, tuner, signal processor (such as an equalizer), audio tape recorder, two VCR's, and a laserdisc player. There is no phono input. All video inputs and outputs have both composite-video and S-video connectors, but the preamp, as usual, performs no conversion between them. The video and audio connections are widely separated from each other. That could increase cable tangling, but it also helps to isolate the video and audio signals from each other within the preamp.

The optional surround-sound decoder module, which installs inside the AVP2000, adds a separate set of linelevel outputs (RCA jacks) for the front left, right, and center channels, the surround channel (left and right), and a subwoofer. The decoder's features are available only to Zone 1, and its

36

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front left and right outputs are duplicated at the regular Zone 1 outputs when it is activated by the FX control.

Each zone is supplied with two sets of stereo RCA-jack outputs, while Zone 1 also has a set of three-prong (professional-audio) XLR balancedoutput connectors. Since the principal advantage of balanced connections is

MEASUREMENTS

PREAMPLIFIER SECTION

All measurements were taken through the laserdisc input and the standard (RCA-jack) Zone 1 outputs.

Output at clipping (1 kHz)	8.95 volts
Input overload level	11 volts
Sensitivity (for 0.5 V output)	68.6 mV
Distortion (1 kHz, THD+N)	0.015%
Noise (A-wtd., re 0.5-V output)	84.5 dB
Frequency response	
20 Hz to 20 kHz	z ±0.01 dB

DOLBY PRO LOGIC DECODER

Unless otherwise noted, all measurements were made at unity gain (volume setting of 65) with laserdisc-input reference levels of 200 millivolts (mV) for the left and right front channels and 141.4 mV for the center and surround channels. All measurements were made with the normal center-channel setting except frequency response and channel separation, which were made with the wideband setting using MLS techniques.

Frequency response

left, right 20 Hz to 20 kHz +0.05, -0.14 dB
center 20 Hz to 20 kHz +0.07, -0.11 dB
surround 20 Hz to 7.6 kHz, +1.5, -3 dB
Noise (A-wtd.)
left, right
center
surround
Distortion (THD+N, 1 kHz)
left, right 0.045%
center 0.04%
0.290
surround
Surround decoder input-overload
Surround decoder input-overload
Surround decoder input-overload margins (at 1 kHz)
Surround decoder input-overload morgins (at 1 kHz) left, right (re a 2-volt input)+1.4 dB
Surround decoder input-overload morgins (at 1 kHz) left, right (re a 2-volt input)+1.4 dB center (re a 1.414-volt input)+3.8 dB
Surround decoder input-overload margins (at 1 kHz) left, right (re a 2-volt input)+1.4 dB center (re a 1.414-volt input)+3.8 dB surround (re a 1.414-volt input)+2.1 dB
Surround decoder input-overload margins (at 1 kHz) left, right (re a 2-volt input)+1.4 dB center (re a 1.414-volt input)+3.8 dB surround (re a 1.414-volt input)+2.1 dB Surround-channel noise-reduction
Surround decoder input-overload margins (at 1 kHz) left, right (re a 2-volt input)+1.4 dB center (re a 1.414-volt input)+3.8 dB surround (re a 1.414-volt input)+2.1 dB Surround-channel noise-reduction colibrotion errors (see text)
Surround decoder input-overload margins (at 1 kHz) left, right (re a 2-volt input)+1.4 dB center (re a 1.414-volt input)+3.8 dB surround (re a 1.414-volt input)+2.1 dB Surround-channel noise-reduction colibrotion errors (see text) Pro Logic mode (re 247.5 mV)3.86 dB

superior rejection of external interference with long cable runs. I would have thought it more appropriate to have Zone 2 signals on the XLR outputs. There are no AC convenience outlets, but there are three extra RCA jacks. One, labeled IR IN, is for attachment to an external infrared receiver (B&K says that the AVP2000 is compatible with most custom-installed infrared control systems). The other two, labeled SEND and RCV, are designated "for future use."

Given such a large number of inputs and outputs, the AVP2000's front panel is surprisingly empty: a ¹/₄-inch headphone jack, six pushbuttons (including power and muting), the display, and a volume knob. But the reason for the wide-open spaces is that you can operate virtually all of the preamp's functions with just four menu-activating buttons and the "interactive" display.

The unusual volume control is a spring-loaded knob, not unlike the shuttle ring on a videodisc player. Rotate it to either side, and the volume changes by steps that vary somewhat in size but average around 1 dB. Internally, the control mechanism is a set of up/down switches.

Changing volume is not so exotic on the remote, which just has a pair of up and down buttons. The rest of the remote is similarly straightforward. In fact, it is easier to run the AVP2000 from the handset than from the front panel, because on the remote many functions (such as input or preset selection) have dedicated buttons and you don't have to slog through the interactive display process required by front-panel operation. The handset is generally well laid out, with the buttons differentiated by size and color but not enough by spacing. It's easy to miss the FX and Menu buttons that are used to control the surround decoder, and the labeling is hard to read in a darkened room.

Fancy switching and programmability aside, the AVP2000 is a rather basic preamp. The only real signal processing it performs is in volume adjustment and the surround functions, which include Dolby Pro Logic decoding as well as several ambienceenhancement modes. The additional

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H-Audio Craft: Akron, Cleveland, Mayfield Hts., Westlakeudio Etc.: Daytone Faragon Sound: Toledo. R-Bradford's Hiff: Eugenee Chelsea AV: Portland, Beaverne Kelly's Home Citt: Salem Larson's: Medford, Boseburge

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modes are Cinema (same as Pro Logic but with a longer maximum surround delay), Stereo Hall (a single delayed reflection to the surrounds), Enhanced Hall (a single delay to the surrounds, center speaker on), Stereo Front/Rear (stereo signals fed to the surround speakers as well as to the front left and right), Enhanced Stereo (center speaker on), Arena (a long-delay echo for programs like sports telecasts), and Stereo (plain two-channel stereo, though you should switch the processor off altogether if you want the cleanest possible stereo reproduction),

The AVP2000's main preamp circuits measured quite well. Its output and input overload levels, in particular, were exceedingly generous. The figures for distortion and signal-tonoise ratio (S/N) were also very good, and frequency response was superb (the variations given in the "Measurements" panel are essentially the resolution limits of our test equipment).

A note on noise: Our test reports for CD and videodisc players commonly report signal-to-noise ratios (or, better, signal-to-dither ratios) of greater than 90 dB. A preamp S/N of "only" 84.5 dB, such as I measured from the AVP2000, would seem to indicate that the preamp is adding noise to its CD output. Not to worry. If the AVP2000's S/N were measured at input and output levels of 2 volts, corresponding to the conventional maximum output of a CD or videodisc player, rather than the 0.5-volt level specified in the EIA amplifier-test standard, it would improve by 12 dB, to 96.5 dB, about the same as that from a CD player. And that's precisely what we measured.

The Dolby Pro Logic system also tested very well, which is attributable in part to the high-performance Analog Devices Pro Logic decoder chip used in the AVP2000's surround module. Noteworthy were the almost spoton THX-reference calibration of the surround channel's noise-reduction system and the very accurate noise-reduction frequency response at all levels specified in the Dolby Pro Logic standard. THX laserdiscs and other discs with spectacular sound should deliver more accurate surround-channel frequency response over a wider range of levels through the AVP2000



It's easier to operate the B&K AVP2000 preamp from its well-laid-out remote control than from the front panel.

decoder than through many other Pro Logic decoders.

The effectiveness of the other surround modes depended heavily on the music. On the other hand, since the Hall and Arena modes introduced only a single delayed surround-speaker ambience "reflection," it was difficult to make them sound really awful—something all too easy to do with similarly monikered modes in some other products. I liked the use of the center-channel speaker in a couple of the modes (it helps create a firmer stereo image), and Stereo Front/Rear is a useful party mode that's surprisingly rare in other equipment.

Even after a week-long period of orientation, however. I found the AVP2000's surround modes somewhat cumbersome to use. That was not the fault of the complete, logically ordered, well-illustrated, and well-written manual (a must-read for this product). Nor did the lack of on-screen readouts prove a major impediment. The selected input and its volume setting are usually shown in the frontpanel display, and not having to turn on a TV to determine those and other important control settings is a blessing when all you want to do is listen to music.

The principal operational problem with the AVP2000 stems from its paucity of front-panel buttons, which necessitates unwieldy multistep menuselection processes for many functions. But even with the remote and its separate control buttons, using any of the advanced features (including Pro Logic decoding) can require a long button-pushing sequence in which it is very easy to overshoot your goal, so that you have to start the whole sequence all over again.

For example, readjusting the speaker levels during Dolby Pro Logic playback (after they have been levelmatched by means of the internal test tone) requires a control sequence just to get to the speaker-balance mode. And when you get there you can't simply turn the surrounds up or down by a couple of decibels, which is perhaps the most common adjustment you'd want to make. You can only adjust the front/surround balance, which is not quite the same thing. Outside the surround modes, things go much more smoothly, since little menudriven interaction is required if you're using the remote.

I also felt that the preamp's preset capabilities could be improved. It would be better if the presets *didn't* memorize the volume setting (or gave you the option of not including it). Volume settings normally vary quite a bit, and if you were to accidentally memorize an unusually high one, you could get an alarming surprise the next time you selected that preset. More useful would be the ability to preset input sensitivities in order to match levels between signal sources.

One nice thing about a microprocessor-controlled product is that it is under the control of software. Changing software is usually a lot easier than changing hardware, and it can be done for equipment already in the field as well as new units coming off the line. So, over time, B&K may well smooth out some of the rough edges on its surround-processor control system. In every other respect, the AVP2000 is a terrific product, delivering excellent performance in all modes, laudable multiroom capability, and fine operation as a basic preamplifier, all at a very attractive price.

"Definitive's Subwoofers Guarantee Ultimate Bass In Your Home!"

Our extraordinary new PowerField[™]1800 features a 500-watt RMS amp, fully adjustable electronic crossover and massive 18-inch driver for only \$1599

"Showstoppers"

--- Stereo Review When Definitive set out to build the world's finest sounding subwoofers, our goal was the perfect synergy of powerful, earth-shaking bass for home theater and a refined and expressive musicality.

First, we developed PowerField Technology for superior high-power coupling and unexcelled transient detail. Next, we engineered beautiful rock solid monocoque cabinets which house our high-power, highcurrent amplifiers, fully adjustable electronic crossovers and massive 15" or 18" drivers. The result is the absolute ultimate in subwoofer performance, awesome bass which thunders down below 15 Hz, yet retains complete musical accuracy for your total enjoyment.



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Three extraordinary Definitive powered subwoofers are now available: the PowerField 15 (185-watts RMS, 15-inch at \$699), PowerField 1500 (250-watts RMS, 15-inch at \$995) and PowerField 1800 (500-watts RMS, 18-inch at \$1599). Hear them today!



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Luxman A-383 Integrated Amplifier JULIAN HIRSCH . HIRSCH-HOUCK LABORATORIES

he Luxman A-383 is a powerful and versatile stereo integrated amplifier with a number of features rarely found in this type of component. Although a twochannel amplifier and therefore not a self-contained audio/video control center, it is easily connected to an external surround processor and a video monitor, VCR, and laserdisc player. In its size, weight, price, and general appearance, however, the A-383 is closer to today's large A/V receivers than to a typical integrated amplifier. It is conservatively rated at 100 watts per channel into 8 ohms with less than 0.04 percent distortion and has enough current capability to drive loads of 4 ohms or less easily and safely.

The large front panel presents a familiar and undaunting array of controls, most of them large rectangular buttons. They are clearly labeled CD, tuner, phono, tape 1, tape 2, LD (laserdisc), A/V (audio/video), VCR, and power. A Line Straight button bypasses the tone controls and such switchable functions as a 20-dB attenuator and loudness compensation (both op-

> DIMENSIONS 171/4 INCHES WIDE, 7 INCHES HIGH, 14% INCHES DEEP

> > PRICE \$1,500

MANUFACTURER LUXMAN ELECTRONICS CORP., DEPT. SR. 915 WASHINGTON AVE, S., MINNEAPOLIS, MN 55415-1245

erated by smaller buttons). Other small buttons select two pairs of speaker outputs, stereo or mono operation, and two functions related to the use of a compatible Luxman CD player in a system with the A-383.

The large volume-control knob at the right is motor-driven when operated from the supplied infrared remote control. Several smaller knobs along the bottom of the panel operate the bass and treble tone controls and the balance control, and a record-out selector enables recording from any input source regardless of which is being listened to. A nearby headphone jack completes the front-panel array.

Despite a considerable population of jacks (more than thirty), the A-383's rear apron does not present a confusing or overwhelming appearance (unlike that of some complicated A/V receivers), thanks to the amplifier's generous dimensions. There are inputs (and outputs, where applicable) for all the sources, plus a video output for a TV monitor. There are also jacks that

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Our award-winning center channels and bipolar surround speakers will complete your dream home theater with sonic perfection!

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enable a signal processor (such as a surround-sound decoder) to be inserted in the signal path. Additional jacks are provided for optional remote-control accessories that can integrate the amplifier into a multiroom system.

The phono input can be switched for a moving-magnet (MM) or moving-coil (MC) cartridge. The speaker outputs are insulated multiway binding posts that accept single or dual banana plugs, stripped wires, or lugs. A unique feature of the A-383 is the Line Phase Sensor indicator on its rear apron, designed to detect incorrect AC-line polarity (which could be a shock hazard or a cause of hum in the system). The A-383 has no AC convenience outlets.

Preconditioning the A-383 (driving both channels to one-third of their rated power into 8-ohm loads) left the

MEASUREMENTS

Output at clipping (1 kHz) Clipping headroom (re rated output) Dynamic power 8 ohms 150 watts Dynamic headroom (re rated output) 8 ohms. 1.8 dB Distortion at rated power0.009% Sensitivity (for 1 watt output into 8 ohms) A-weighted noise (re 1 watt output)-77 dB phono..... Phono-input overload (1-kHz-equivalent levels) Phono-input impedance Tone-control range 100 Hz±10 dB **RIAA phono-equalization error** (20 Hz to 20 kHz) +0.1, -0.6 dB Frequency response (with tone controls top of the amplifier only moderately warm, still comfortable to the touch. Since that kind of operation normally generates the highest temperatures an amplifier will experience, it is safe to say that the A-383 will present no heat-dissipation problems in a home installation. During extended listening tests the top was never more than faintly warm to the touch.

At 1 kHz, the outputs clipped at 135 watts per channel into 8 ohms and at 210 watts into 4 ohms. The dynamic (short-term) output was substantially greater, and in that test we also drove 2-ohm loads, to an impressive 440 watts per channel. From 20 Hz to 20 kHz at a constant 0.1 percent total harmonic distortion plus noise (THD+N), the amplifier delivered between 127 and 130 watts per channel into 8 ohms and between 181 and 193 watts per channel into 4 ohms.

A spectrum analysis of the distortion components was even more impressive. At 125 watts into 8 ohms at 1 kHz, the combined level of all distortion products up to 20 kHz was a minuscule 0.006 percent, or -84 dB. With a 4-ohm load, at 180 watts output, the distortion was even lower-0.005 percent, or -85 dB.

Other measurements were equally impressive. The frequency response with Line Straight engaged was a virtually ruler-flat ± 0.01 dB from 20 Hz to 6 kHz and down just 0.1 dB at 20 kHz, rolling off to -3 dB at 110 kHz. Even with the tone controls in the signal path, the response deviations were only slightly greater.

The tone-control characteristics were almost perfectly symmetrical about a 1-kHz center frequency as well as about the response axis. Although not a particularly critical matter, a number of tone controls we have encountered have had characteristics only loosely related to their settings. The Luxman A-383's tone controls produced curves resembling textbook illustrations.

Switching on the loudness compensation introduced a boost of 4 to 6 dB at low and high frequencies, relative to the 1-kHz level, that did not vary with volume setting. Though hardly an important consideration for most listeners, that characteristic is a departure The Luxman A-383 integrated amplifier's unique Line Phase Sensor detects incorrect AC-line polarity, which could be a shock hazard or cause hum.

from the original concept of progressively compensating for reduced hearing sensitivity at frequency extremes as the overall level is reduced.

Although we did not use any of the A-383's multiroom capabilities, the system remote control can operate a number of other Luxman components (tuner, CD player, tape deck) as well as select inputs and vary the volume setting on the amplifier.

As its weight and bulk suggest, the Luxman A-383 is built like a battleship, and there was clearly no skimping in its design and construction. Although its weight is given as 14 kilograms (about 31 pounds), it felt heavier. As in every other characteristic, however, this beautiful amplifier matched its specification, weighing in at 31 pounds on our scale.

Our tests and use of the Luxman A-383 left no doubt that it would be an excellent choice to serve as the heart of the finest home audio (or audio/ video) installation.



How Do You "...The Best Value

Cambridge SoundWorks Introduces New Ensemble, New Ensemble II

Audio Magazine once said that our Ensemble speaker system may be "the best value in the world." Dozens of critics and thousands of customers have applauded our Ensemble and Ensemble II 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 with precise stereo imaging – all at factory-direct prices, with no expensive middlemen.

We are now pleased to introduce new versions of our Ensemble and Ensemble II systems, as well as our new, ultra-compact Ensemble III system.



The New Ensemble

New Ensemble is an improved version of our original, dual-subwoofer/satellite speaker system. New Ensemble maintains the dual subwoofer design of Ensemble, which allows for maximum room placement flexibility. Placement of bass and highfrequency speakers in a room-and how those speakers interact with the acoustics of the room-has more influence on the overall sound quality of a stereo system than just about anything. New Ensemble's two ultraslim subwoofers give you more placement flexibility than any speaker system we know of, and is most likely to provide the performance you want in the real world...in your room. Having two, compact subwoofers lets you move them around, experiment, and find that placement that gives you exactly



the sound you want. This is one of the reasons *Esquire* described Ensemble by saying "you get 30 days to return the speakers or keep them, but you'll keep them."

So What's New?

New Ensemble maintains the tonal balance, frequency range and quality of construction of the original. There are two basic differences.

1. New "long throw" subwoofer speakers with built-in heat sinks. New Ensemble uses the 8" long throw woofer designed for our Powered Subwoofer II. The woofer's extremely long "throw" (almost 1") provides for more linear cone excursion for more accurate bass. A unique integral heat sink provides improved power handling.

2. New frequency balance controls. New Ensemble's satellite speakers use the same high quality 1 3/4" tweeter, 4" midrange driver and crossover as the original Ensemble, but with newly designed midrange and high-frequency balance control switches.

A two-position midrange switch on each satellite lets you choose the same output in the key 800-1600 Hz octave as in the original – or you can flip the switch to emphasize that octave by 2 dB. The original Ensemble's response was tailored to avoid the "boxy" characteristic typical of many speakers. This results in an "open" sound on large-scale musical works. For some music, switching to the higher output position provides a "warmer" sound that some listeners may prefer.

A second, high-frequency switch has three positions:

A) The same balance as original Ensemble.

B) A 2 dB high-frequency increase.
C) A 2 dB high-frequency decrease.
Rather than affecting tonal balance as does the midrange control, the high-frequency switch can subtly increase the system's "airiness" (Increase) or it can reduce any tendency towards "edginess" (Decrease).

Real Life Performance, Real Value.

In terms of "real life" performance (your music, your listening room), we believe our New Ensemble system competes head-on with speakers selling for hundreds of dollars more. Available factory-direct with black vinyl-clad subwoofers for **\$549**, or with black-laminate subwoofers for **\$629**.

The New Ensemble II.

New Ensemble II is an improved version of our best-selling speaker system, Ensemble II. It's more affordable than New Ensemble because it uses one cabinet to house both subwoofer speakers. Its satellite speakers are identical in every way to those used in the New Ensemble, including the new highfrequency and midrange balance controls.



So What's New?

New Ensemble II maintains the overall tonal balance, frequency range, power handling and quality of construction that have made the original Ensemble II one of the country's most popular speaker systems. There are two basic differences. The first is

Improve () nTheV In

- and a new member of the family, Ensemble III.

that its satellite speakers use the same highfrequency and midrange balance controls as our New Ensemble system (see previous description). The satellites also use the same gold-plated 5-way connecting posts as New Ensemble. The second difference involves a redesigned subwoofer cabinet.

New flared subwoofer port. New Ensemble II's subwoofer cabinet encloses twin 6 1/2" long throw woofers mounted in a sealed "acoustic suspension" chamber. They project into a second chamber fitted with a single, flared port. The new port provides smoother air flow, virtually eliminating the generation of any extraneous noise on strong, low bass notes.



"...Beyond Its Price And Size Class

Stereo Review said that the original Ensemble II "performs so far beyond its price and size class that it can be compared only with much larger speakers at substan-tially higher prices." We believe New Ensemble II carries on this

tradition, clearly outperforming other speakers in its category, including wellknown models that sell for about twice the price. Available factory-direct for \$439.

The Ensemble III

Now you can bring the clear, balanced wide-range sound of Ensemble speakers to a small room. Our new Ensemble III speaker system is ultracompact: a pair of twoway satellite speakers measuring 4 1/2" x 6 1/2" x 3" and one subwoofer

We know you'll like our Ensemble III stereo system - if you don't, return it within 30 days for a full refund.



We combined Ensemble III with advanced Pioneer components to create a true high performance sound system at a great price. The Pioneer receiver delivers 100 watts per channel and includes 6 inputs. Remote controls other Pioneer components. The Pioneer CD player uses a super-high-speed 1-bit digital-to-analog converter for natural, accurate sound, and it's loaded with features. This system offers outstanding performance and value-all in a very compact package.

cabinet measuring just 8" x 8" x 15".

Surprising Accuracy and Musical Range at a Low Price.

Compared to our New Ensemble II system, Ensemble III gives up a little in the way of power handling, low bass range, and efficiency. Unlike the "cube" satellite speakers you'd expect to find in

similarly priced systems, Ensemble III's satellites are true two-way speakers with a 3 1/2" midrange driver, a 3/4" tweeter and a crossover. Ensemble III's 6 1/2" woofer uses two separate voice coils (one for each channel) in a cabinet using a special flared port for

smooth air flow. With most recordings Ensemble III will sound virtually identical to New Ensemble II. It simply won't play quite

as loudly. Its construc-

tion quality matches

that of our other

Ensemble speakers. With a factory-direct price of only \$329, Ensemble III is perhaps the best speaker value of all time.

Risk Free, Satisfaction Guaranteed.

All Cambridge SoundWorks speakers are backed by a 30-Day Total Satisfaction Guarantee. So you can audition your speaker

the *right* way – in your home, with no salesman hovering nearby. If within 30 days you're not happy, return your system for a full refund. We even reimburse original UPS ground shipping charges in continental U.S.



The satellite speakers used in the New Ensemble and New Ensemble II include midrange and high-frequency tonal balance controls, and gold-plated 5-way binding posts.



All three Ensemble speaker systems come with 100 feet of speaker wire, a wire cutter/stripper, accessories, and our Guide To Surround Sound.

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ADS S-700 Loudspeaker System JULIAN HIRSCH • HIRSCH-HOUCK LABORATORIES

he new ADS S-Class family of compact loudspeakers was designed, the company says, to provide exceptional sound quality at moderate prices. The ADS S-700, which we tested, is the largest of the three models currently in that line.

The S-700 is intended primarily for stand mounting, and ADS says that for best results it should be placed at the listener's ear level, away from the room walls, and at least two feet from any corner. Its cabinet, made of 3/4inch-thick medium-density fiberboard (MDF), has a deep charcoal-gray matte finish. A removable frameless perforated-metal grille, matching the color of the cabinet, is supported on stand-offs about ³/₄ inch from the front baffle.

ADS designed and built the drivers as well as the crossover network. The S-700 is a two-way system with a 7³/4-inch woofer operating in a sealed (acoustic-suspension) enclosure and crossing over at 3 kHz to a 1-inch dome tweeter. Both drivers are mounted flush with the baffle. The woofer cone and tweeter dome are made of a proprietary copolymer material, and the tweeter's voice coil is protected against burnout by an automatically resetting solid-state device.

The four input terminals (separate pairs for the tweeter and woofer sections) are five-way binding posts recessed into the back of the cabinet.



Normally, the two sets of driver inputs are connected together in parallel by a small printed-circuit board, which can be removed for biwired or biamplified operation of the system.

The S-700's nominal impedance is 4 ohms, and its rated sensitivity is 88 dB sound-pressure level (SPL) at 1 meter with 2.83 volts of pink-noise input (equivalent to 1 watt into 8 ohms). ADS recommends using the speaker with amplifiers rated from 20 to 200 watts per channel. The rated frequency response is 40 Hz to 20 kHz ±3 dB.

We placed the S-700's on stands that located them well away from the room walls and with their tweeters at the recommended height. The averaged frequency response of the left and right speakers, derived from swept sine-wave room-response measurements above about 500 Hz, was spliced to a close-miked measurement of the woofer output below that frequency to form a composite frequency-response curve.

The room response was impressively flat, within ±2 dB from 500 Hz to 20 kHz. The woofer response, which had a broad maximum at 150 Hz. spliced easily to the room curve with about an octave overlap. The resulting composite frequency response was approximately ±4 dB from 55 Hz to 20 kHz. As with any audio installation, the actual frequency response will depend on the room's geometry, its acoustic treatment, and the placement of the speakers.

Quasi-anechoic MLS frequency-response measurements at 2 meters showed an overall variation of only ± 3 dB from 300 Hz to 20 kHz. The tweeter's horizontal dispersion was typical of 1-inch domes, with the output 45 degrees off the forward axis dropping by less than 5 dB at 10 kHz and by 12 dB at 20 kHz compared with the onaxis readings.

Our frequency-response data correlated very well with test graphs ADS made on the same pair of speakers, which confirmed that the maximum output is in the octave between 100 and 200 Hz, with a 5-dB drop from g 200 Hz to between 2 and 3 kHz and a strong top-octave response from 10 to 20 kHz. That degree of similarity beThe measured response of the ADS S-700 speaker was impressively flat, and the woofer output was strong, especially in the upper bass.

under totally different conditions is extremely rare in our experience.

The system's sensitivity was 88 dB. as rated. Its minimum impedance was 4.3 ohms at 148 Hz and 20 Hz, the maximum 21 ohms at 58 Hz and 1.3 kHz. Woofer distortion with an input of 3.5 volts (equivalent to a 90-dB SPL output in our sensitivity measurements) was typically about 0.5 percent from 70 Hz to 2 kHz, rising to 2.5 percent at 50 Hz and 10 percent at 20 Hz. The drivers were able to survive peak inputs well in excess of their ratings without damage. At 100 Hz, a singlecycle sine-wave input of 275 watts into the system's 5-ohm impedance at that frequency caused the woofer cone to bottom noisily, though with surprisingly little waveform distortion in its acoustic output. At higher frequencies the amplifier reached its clipping level (400 to 800 watts, depending on frequency) before the speaker exhibited any signs of distress.

We had listened to the speakers for some time before making any measurements, and hearing them left no doubt that they were very good speakers in every respect. Still, it was gratifying to find that our microphone and instruments rendered the same judgment. The ADS S-700 is a deceptively compact speaker whose sound quality gives few hints of its size (or price, for that matter). As unobtrusive visually as it is sonically, this affordably priced speaker should be ideal for stereo music systems or modest home theater installations.

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noise sound wave is generated. When the anti-noise wave meets the offensive noise, the incoming noise is reduced.
Because active technology requires precise sound generation. NoiseBuster is a superior headphone designed for a truer representation of the audio signal and enhanced clarity. • Comfortable and lightweight. NoiseBuster won't leave you singing the blues.

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Yamaha KX-580 Cassette Deck CRAIG STARK . HIRSCH-HOUCK LABORATORIES

he Model KX-580 is the newest member of the Yamaha line of cassette decks. Designed for users who want to minimize cost but still insist on most of the advanced features normally found only on higher-price machines, the KX-580 is a two-head, single-capstan recorder. At the same time, however, its features include not only Dolby B and C noise reduction, but also the more sophisticated Dolby S noise-reduction system. Automatic bias optimization, with an additional user-adjustable bias control, and the Dolby HX Pro system for extending highfrequency headroom are among the deck's other primary attractions. Also included are bidirectional intro-scan for identifying selections and a Play Trim control for modifying the frequency balance during playback.

Using two heads rather than three shaves approximately \$100 from the

list price, but it precludes continuous monitoring of the recorded sound and immediate comparison between input and recording. And since a relatively wide head gap is necessary to achieve maximum signal-to-noise ratio (S/N) in recording, while playback of the highest frequencies requires a very narrow head gap, using the same head for both functions is inevitably some-

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thing of a compromise. In the case of the KX-580, the record/playback head is made of hard permalloy. The single capstan is belt-driven by a DC servomotor. The reel hubs are turned by a separate DC motor.

The cassette-well door has a very small opening, making viewing the remaining tape on a reel very difficult and checking the label impossible. Removing the door is easy, but unfortunately that still does not provide good access to the heads and capstan for cleaning and demagnetizing. Although not absolutely required, using a long rather than a standard-length cotton swab (or a cassette-shell-based cleaner) will facilitate routine cleaning.

When a cassette is inserted, the KX-580 automatically selects a standard recording equalization and bias setting for the tape type in use. The factory settings work well for most tapes, but the KX-580 is also equipped with an Auto Tape Tuning feature to fine-tune the settings for individual tapes. Different brands and makes of tape often require different settings to achieve their flattest response and lowest dis-



Introducing *SoundWorks* By Henry Kloss.

We'll get right to the point. SoundWorks – our new amplified speaker system may well be the most exciting product ever designed by Henry Kloss – and the most affordable. Never before has so much high quality, wide-range, natural, "big" sound come from such a small, affordable system. It is ideal for literally hundreds of applications, and thousands of people.

SoundWorks consists of a pair of satellite speakers (app. 3 1/2" x 3 1/2" x 3 1/2") and a compact, powered subwoofer cabinet that encloses a 4" woofer, a 3-channel amplifier, equalization and crossover electronics, as well as a control panel.

The Satellites.

The small satellites are magnetically shielded so they can be used very close to a TV or computer monitor. They contain a remarkable 2" speaker driver with a longthrow/wide-range design that reproduces high and mid frequencies all the way down to 150 Hz, without the need for a "midrange" driver. You can order *SoundWorks* with satellites finished black, or in "computerbeige." The satellites can be used as is, hung on walls using their back-panel keyhole slot, used with their supplied mini-stands, or they can be attached to a computer monitor with their velcro kit (supplied).

The Subwoofer.

The subwoofer cabinet (a little bigger than a shoe box: 5" x 8" x 9") reproduces only non-directional bass so it can be placed in out-of-the-way places – on the floor behind your TV set, under your computer desk, or in back of furniture. It contains a 3-channel amplifier that's been precisely tailored to match the speaker drivers. Its control panel includes a stereo mini-jack input for connecting to a computer or a portable CD player, a "set and forget" bass level control, and connecting terminals for the satellite **\$199** Not including CD player

Never Before Has So Much High Quality, Wide Range, Natural, "Big" Sound Come From Such A Small, Affordable System.

speaker wires. It also has an input for 12 voltso you can plug *SoundWorks* into the cigarette lighter in your car or boat!

The Sound.

"Amazing." "Remarkable." "Unbelievable." These are the words used by leading members of the audio press at the unveiling of *SoundWorks*. In terms of frequency range, tonal balance, stereo imaging and overall sound, *SoundWorks* compares <u>very</u> favorably with component music systems costing <u>far</u> more. It just doesn't seem possible that a system so small could produce a sound so "big." But it does.

The Applications.

Because of its small size and price, and because of its magnetically shielded satellites, *SoundV-orks* is ideal for use as a multimedia speaket with any computer (it sounds far better than any we've heard designed for that use). It fits easily into smaller rooms – like kitchens, dens, dorms and bedrooms. Its 12-volt capabilities make it perfect for boats, campers and cars. And it's small Enough to pack in a suitcase, so you

can travel with it.

The Price.

You can buy *SoundWorks* <u>only</u> factory-direct from Cambridge SoundWorks. Because we eliminate expensive middlemen, we can sell *SoundWorks* for only \$199. We haven't heard a system for anywhere near its price that we think sounds nearly as good. Period.

30-Day Risk-Free Audition.

With our 30-day risk-free home audition, you can listen to *SoundWorks* the <u>right</u> way – in your home, with your music. If you aren't happy, return it within 30 days for a full refund. We even reimburse your original UPS ground shipping charges in the continental U.S.

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fine-tuning bias and equalization can substantially improve performance. Unlike most other two-head decks, the KX-580 makes the process easy: You simply press the Auto Tuning button with the deck in recording-pause mode, which initiates a short calibration program. By recording and playing back a short sequence of tones, the KX-580 automatically determines the optimum bias and equalization settings. But the deck also has a manual bias control in case the settings chosen by the Auto Tuning program prove less than ideal or otherwise not to your liking.

To fine-tune playback performance, the KX-580 provides an additional Play Trim control to correct for slightly excessive or deficient high-frequency output. Although the control lacks any calibration to inform the user exactly how much treble is being added or removed, it can be a very useful feature. By varying the amount of treble fed to the Dolby decoders, the Play Trim control can help alleviate the problems often associated with recording on one deck and playing back on a second. All too often, response or azimuth variations between decks cause the Dolby systems to magnify or dull the highs. By adjusting the Play Trim control by ear, you have a shot at restoring the response in such situations to what it ought to be.

Signal levels are shown on an fifteen-segment peak-reading display, which is calibrated from -30 to +8 dB. Unlike some other decks with 0-dB indications set to the old, now unrealistically low standard level of 160 nanowebers (nWb) per meter, the KX-580 uses the more modern and realistic 250-nWb/m reference. This standard insures that the 0-dB indication is at (or very close to) the maximum signal the tape can hold without excessive distortion. Tape position is shown on a four-digit fluorescent counter; it does not indicate elapsed or remaining time, however.

A fold-down panel on the front of the KX-580 covers most of its controls and switches. There are six pushbuttons: counter reset, memory, repeat play, Auto Tape Tuning, and two controlling the Dolby and multiplex-filter (MPX) settings. Although the buttons

MEASUREMENTS

Fast-forward time (C-60).	85 seconds
Rewind time (C-60)	87 seconds
Speed error	0.38%
Dolby tracking error	
Dolby B	+0.5. –0 dB
Dolby C	+4.5, -0 dB
Dolby S	+ 2.4. –0 dB
Wow-and-flutter	
DIN peak-weighted	0.069%
wrms	0.040%
Line input for indicated 0	dB120 mV
Line output at indicated 0	dB0.54 volt
Meter indication at IEC-sta	ndard
0 dB	0 dB

TDK AD (TYPE I, FERRIC)

IEC O-dB distortion				
Signal-to-noise ratios (in decibels):				
	Unwid.	A-wid.	CCIR/ARM	
NR off	50.2	55.0	51.6	
Dolby B	57.3	64.4	62.2	
Dolby C	58.7	71.4	71.9	
Dolhy S	57.3	71.0	74.4	

TDK SA (TYPE II, CHROME-EQUIVALENT)

IEC O-dB distortion 1.7% Meter indication at 3% THD plus

0 dB

Signal-to-noise ratios (in decibels)				
	Unwtd.	A-wid.	CCIRIARM	
NR off	52.5	56 .8	53.4	
Dolby B	58.4	65.3	63.8	
Dolby C	60.3	74.0	73.8	
Dolby S	61.3	74.7	76.0	

themselves are easily visible, their identifying labels can be seen only from directly head-on or below. Beneath the buttons are a headphone jack and a row of five knobs for headphone level, bias adjustment, Play Trim, input balance, and recording level. They are all easy to operate and quite clearly marked.

On the right-hand side of the front panel is the usual array of transport controls, a pair of intro-scan buttons, and a search button that doubles as a recording-mute switch. The intro-scan buttons enable the user to preview the

TDK MA (TYPE IV, METAL)				
IEC O-dB distortion				
Meter indication at 3% THD plus				
noise				
Signal-to-noise ratios (in decibels)				
	Unwtd.	A-wid.	CCIR/ARM	
NR off	54.0	58.8	55.6	
Dolby B	58.5	67.2	65.9	
Dolby C	61.0	71.6	75.4	
Dolby S	60. 9	75.0	78.1	

RECORD/PLAYBACK FREQUENCY RESPONSES



PLAYBACK-ONLY RESPONSES (IEC-STANDARD BASF TEST TAPES)



first few seconds of each track in either direction from the current position. Simply skipping to the previous or next track is accomplished by pressing the search button and either the fast-forward or rewind button simultaneously.

The KX-580 showed a slight playback-response rolloff at the high end, amounting to approximately -3 dB at 18 kHz, with our calibrated IEC (BASF) Type I (ferric) test tape. Through the rest of the range, the variation was less than ± 1 dB. Response with the calibrated Type II (chrome)

Cambridge SoundWorks Takes Center Stage.

Model Ten-A

Center Channel Plus

Our experience with Dolby Surround Pro Logic sound systems is that the center

channel is *very* important. A significant portion of movie soundtracks is directed to the center channel in a Pro Logic system. It's crucial that the center channel speaker is capable of reproducing the material accurately, with proper volume level and dispersion.

Cambridge SoundWorks manufactures three center channel speakers. All three produce natural, accurate, well-dispersed sound. All three are magnetically shielded so you can place them close to your TV



Surround Speakers. We make two different dipole radiator surround channel speakers, *The Surround* and *The Surround II*. They disperse surround channel signals so you'll hear them the way they were meant to be heard. Factory-direct prices, **\$399 & \$249 pr**.

monitor. All three are covered by our 7-year parts & labor warranty and our 30-day money-back guarantee. And because we sell



factory-direct, with no expensive middlemen, all three speakers are excellent values.

Model Ten-A.

Model Ten-A is a very small (4 1/2" x 6 1/2" x 3"), two-way acoustic suspension speaker that's ideal for an affordable Pro Logic system. Its small size makes it easy to place near your TV. And its balanced, natural sound will satisfy even critical listeners. It is acoustically identical to the satellite speakers in our *Ensemble III* system. Factorydirect price, **\$80**.

Center Channel.

Center Channel is a compact, two-way, acoustic suspension speaker that is

acoustically identical to the satellite speakers in our *New Ensemble®* and *New Ensemble II* speaker systems.* Its wide-range, welldispersed, balanced sound and high power handling capability make it one of the country's best values in a center channel speaker. Factory-direct price, **\$149**.

Center Channel Plus.

Center Channel Plus is an outstanding center channel speaker in that it provides outstanding acoustic performance, while blending in to the "TV environment" in a unique way. *Center Channel Plus* uses four 3" long-throw woofers and a tweeter that perfectly matches the acoustics of our *New Ensemble* and *New Ensemble II* systems. The frequency range of the outer pair of 3" woofers is intentionally tailored to maintain proper dispersion characteristics.

Because of its ultra-wide, ultra-low



Center Channel

profile, *Center Channel Plus* is ideal for placement directly on top of your TV. Or, with an optional support stand, you can place it directly beneath your TV. We don't know of any other center channel loudspeaker that offers the combination of high performance and versatility of placement as *Center Channel Plus*. It is our best selling center channel speaker. Factory-direct

Free Surround Sound Guide For your free copy of our booklet, "Getting The Most From Your Dolby Surround System," call us toll-free at 1-800-FOR-HIFI.



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CIRCLE NO. 6 ON READER SERVICE CARD

tape was slightly better, not showing as marked a rolloff.

Using our center-line sample cassettes of TDK MA (Type IV, metal), TDK SA (Type II, chrome-equivalent), and TDK AD (Type I, ferric), we calibrated the deck for each tape with its Auto Tape Tuning feature and measured the overall record-playback responses. At the usual -20-dB reference level, response was within ±0.5 from roughly 40 Hz to 18 kHz with the metal tape, to 16 kHz with the chrome-equivalent, and to 14 kHz with the ferric. Dolby tracking error was greater than we like to see, particularly for Dolby C and S. Fortunately, the deviations can be largely corrected with the Play Trim control.

Perhaps because of the KX-580's two-head design, high-frequency response rolled off somewhat earlier at the IEC 0-dB level than we usually see in a deck equipped with Dolby HX Pro—it was down 3 dB at approximately 8, 9, and 13 kHz for the ferric, chrome, and metal tapes, respectively. That performance could be improved by manually adjusting the bias control, but at the expense of response flatness at -20 dB, which is more important except for music that is unusually rich in high-frequency energy.

The KX-580's noise performance was very good and reflected the effectiveness of the Dolby S circuitry. Our S/N measurements ranged from 72 to 75 dB (CCIR/ARM-weighted) using Dolby C and from 74 to 78 dB using Dolby S. And Yamaha's choice of 250-nWb/m for the 0-dB point on the meters takes the guesswork out of realizing that S/N performance. Instead of setting the peaks at some unknown point "in the red," you can record knowing that the 0-dB marking corresponds pretty well to the overload threshold.

Measurements of the KX-580's transport showed low, but not negligible, amounts of wow and flutter and a modest overall speed error. High-speed winding was quick, and the deck's input and output levels were entirely normal.

Apart from the difficulty of reading the labels for the pushbutton switches behind the access panel, the KX-580 was quite well designed and easy to Yamaha's Play Trim control can help alleviate the problems of recording on one deck and playing back on another one.

operate. The only other complaint we had about the deck's operation has to do with the slightly odd grouping of the filter controls. Dolby B, C, B+MPX, and C+MPX are selected by one pushbutton and Dolby S and S+MPX by another. The more usual configuration, with Dolby noise reduction selected by one control and the multiplex filter turned on or off by another, seems more logical.

The KX-580 performed quite well in A/B listening tests. Although it exhibited some low-level grunge with metal tapes, perhaps because it was unable to fully erase them before recording, it did very well with the more commonly used ferric and chromeequivalent tapes.

We were surprised to find that tapes recorded with Dolby C often sounded better than those recorded with Dolby S. Even though the measured S/N was better with Dolby S, the noise that remained manifested itself in the KX-580 as an audible hiss that was not as offensive (but still slightly audible) with Dolby C. Further, although the Dolby S recordings preserved the attacks of notes and the ambience of the hall better than their Dolby C counterparts, the Dolby C recordings often sounded smoother and more natural. Even when we used Play Trim to help alleviate the tracking error, the Dolby S recordings were a bit harsher than either the original sources or the Dolby C versions.

Overall, the KX-580's sound was quite good, especially for the price. As with any analog recordings, there was always some loss, but with Dolby C and a high-quality chrome tape, the KX-580 was able to keep the loss very small. Where quality was lost, it was usually in the overall resolution and the low-level detail, with the tape copy sounding a bit more limited in its dynamics and clarity than the original. And though the KX-580's overall tonal balance and imaging were excellent, it was difficult to set recording levels so that tape hiss was low enough to remain inoffensive while still keeping musical peaks completely undistorted

In sum, the Yamaha KX-580 is a fine performer in its price class and is certainly well enough equipped with high-performance features to make it a good choice for the value-conscious consumer.



"... Okay, mister, hand over that removable front panel from your car stereo!"



Slave Subwoofer \$299/\$15 Month*

Powered Subwoofer II \$399/\$15 Month*

A semi truck landing after a 20 foot fall in *Terminator 2*. The heavy pounding of feet of a T-Rex in *Jurassic Park*. These are examples of the ultra-low, ultra-strong bass signals on today's movie soundtracks. Such frequencies are rare in music, and are beyond the capabilities of most speakers designed for music.

The Cambridge SoundWorks powered subwoofers reproduce these bass signals with the power and impact you would experience in movie theaters with the very best sound systems.

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Our Powered Subwoofer consists of a heavy duty, 12" long-throw acoustic suspension woofer integrated with a 140 watt amplifier - all in a black, vinyl-clad cabinet. Its control panel includes a bass level control and a fourposition electronic crossover frequency selector (to match the subwoofer to your speakers). The Powered Subwoofer reproduces accurate bass to below 30 Hz. You'll hear soundtracks the way they were meant to be heard...better than most theaters. Factory-direct price, \$699.

Our Slave Subwoofer.

For all-out home theater performance, you can add our optional *Slave Subwoofer*, which is identical to our *Powered Subwoofer*, except that it lacks the amplifier and controls. It uses the amplifier and controls built into the *Powered Subwoofer*. The combination reproduces a below-30 Hz signal cleanly to a sound pressure level of over 100 dB in a 3,000 cubic foot room! That's enough clean, deep bass for the largest home theaters. Factory-direct price, **\$299**.

"Room Shak

"...deep powerful bass...31.5 Hz bass output was obtainable at a room-shaking level...they open the way to having a 'killer' system for an affordable price." Stereo Review

Our Powered Subwoofer II.

Our *Powered Subwoofer II* uses a heavy duty 8" acoustic suspension

woofer in a vinyl-clad cabinet that also holds a 120-watt amplifier. The *Powered Subwoofer II's* 8" woofer has a very long (3/4") "throw" for powerful, linear bass response. Its amplifier employs electronic equalization to extend uniform output to well

below 30 Hz. Bass performance is, in fact, identical to that of our *Powered Subwoofer*, although total acoustic output is not as suitable for exceptionally large rooms. There is also no provision for connecting a "slave" subwoofer.

The woofer uses a unique heat sink, instead of a dust cap (see illustration). An input gain control and a variable low-pass filter let you match *Powered Subwoofer II* to any speaker system. Factory-direct price, \$399.

Stereo Review

Satisfaction Guaranteed.

With our 30-day money-back guarantee you can audition these speakers the *right* way - in your home, listening to your music, with no salesman hovering nearby. If within 30 days you aren't entirely happy, return your system for a full refund. We even reimburse original UPS ground shipping charges in the continental U.S.

"I was taken aback by the ability of your Powered Subwoofer to fill my living room with ultra-low bass.. I am extremely impressed with your product and will not hesitate in recommending it to anyone interested in serious bass. I am an extremely happy bass-a-holic." Guy C., Customer



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Velodyne DP-661 Loudspeaker System JULIAN HIRSCH . HIRSCH-HOUCK LABORATORIES

or many years Velodyne has been known for its line of powered subwoofers, currently comprising at least eight models. The company has now taken the logical next step with the introduction of fullrange speakers that can be used on their own or together with its subwoofers.

The DF-661's model number reflects both its driver complement and its design goal. The DF stands for "distortion-free," while 661 designates a 6-inch woofer, a 6-inch midrange driver, and a 1-inch tweeter.

The DF-661 is obviously a threeway system, though quite unlike any other we have seen. It is compact, but extraordinarily heavy for its size, and handsomely finished. The entire front is covered by an acoustically transparent black cloth grille.

Removing the grille gives you the second clue to this speaker's unusual character (the first comes when you try to pick it up!): The woofer and midrange cones are made of spun aluminum, with no sign of the usual

voice-coil dust cap. The voice coils and magnet structures are completely behind the cones, which merely come to a rounded point at their apexes.

Although the woofer and midrange cones are the same size (and have a superficial external resemblance to each other), the drivers are actually quite different. The woofer cone's compliant surround allows the excur-

> DIMENSIONS 81/2 INCHES WIDE, 187/8 INCHES HIGH, 101/2 INCHES DEEP

FINISH BLACK VINYL, PIANO BLACK (GLOSSY), OR ROSEWOOD, OAK, OR WALNUT VENEER

> WEIGHT 40 POUNDS

PRICE

\$1,800 TO \$2,600 A PAIR DEPENDING ON FINISH

MANUFACTURER VELODYNE ACOUSTICS, INC., DEPT. SR, 1070 COMMERCIAL ST., SUITE 101, SAN JOSE, CA 95112

sion needed to generate low frequencies at a useful level, whereas the midrange cone (which operates between 750 Hz and 5 kHz) has a relatively rigid mounting and does not visibly move. The tweeter, located between the two cone drivers, is a conventional 1-inch aluminum dome protected by a metal screen.

Each cone driver occupies a separate subenclosure. The 700-cubic-inch woofer volume is vented through a port in the back of the cabinet. The midrange driver operates in a 260-cubic-inch sealed volume,

Recessed into the rear panel are two pairs of gold-plated binding posts compatible with dual banana plugs as well as wires and lugs. The posts are normally paralleled by removable jumper straps. Removing the jumpers enables the DF-661 to be biwired or biamplified.

Velodyne stresses the importance of low nonlinear distortion (both harmonic and intermodulation) in a loudspeaker. The well-done, informative owner's manual for the DF-661 devotes a couple of pages to nonlinear distortion and its effects, including a couple of spectrum-analyzer plots for the DF-661 and an unnamed "comparable system." The plots indicate that the DF-661's harmonic spectrum is appreciably lower in level than that of the other speaker.

We installed the speakers with the tweeters and midrange drivers roughly at ear level, several feet from any room walls, both for listening and for our room-response measurements. Initial listening tests demonstrated that the DF-661 was a smooth, cleansounding system with no obvious colorations and surprisingly good bass considering its rated response, ±2 dB from 60 Hz to 20 kHz.

The room curve (above approximately 300 Hz) sloped down gently to a plateau between 3 and 20 kHz. The close-miked woofer/midrange response showed a similar downward sloping characteristic, although its upper portion could not be measured accurately by this method. Response measurements below 100 Hz were difficult to interpret, since most of the output in that range came from the port, which does not necessarily con-

In-Wall Speakers By Henry Kloss.

Inside.

We Don't Know Of Any Other In-Wall Speakers That Match Their Performance, Durability, Value And Ease Of Installation.

Cambridge SoundWorks manufactures two different in-wall speaker systems designed by Henry Kloss (founder of AR, KLH & Advent). The in-wall version of our *Ambiance*[™] speaker is designed for use indoors. The in-wall version of our all-weather speaker, *The Outdoor*, is suitable for use on the patio, by the pool...even on boats.

Both systems deliver the widerange, accurate, natural sound people expect from Cambridge SoundWorks. Both systems are covered by our 7-year parts & labor warranty and our 30-day moneyback guarantee. And because we sell only factory-direct, with no expensive middlemen, both systems represent outstanding values.

Ambiance In-Wall Speakers.

We don't know of *any* ultracompact speaker - at *any* price better than our *Ambiance* speakers. (Also available in free-standing cabinets.) Henry Kloss chose a very wide dispersion tweeter for *Ambiance* In-Wall. It delivers accurate midrange/high-frequency response over a very wide pattern, so you can place the system very high - or very low - on a wall and still hear realistic stereo imaging anywhere in the room. This flexibility can be very important for in-wall

very important for in-wall installations.

We don't know of any loudspeaker its size with better bass response than *Ambiance* In-Wall. *Stereo Review* magazine said "They easily held their own against substantially larger, more expensive speakers...a lot of good sound at a hardto-beat price." Factorydirect price, \$329 pr.



And Out.

The Outdoor In-Wall Speakers.

The Outdoor In-Wall speaker is very similar to *Ambiance* in overall sound, and has the same wide dispersion pattern. It is slightly more efficient, so that it can produce

high volume levels with a

outdoor speaker. It has an

reasonably powered receiver -

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and music systems designed by Henry Kloss (founder of AR, KLH & Advent). We sell them-and components from companies like Sony, Pioneer, Philips, Carver and othersfactory -direct, with no expensive middlemen. For example, a Dolby Pro Logic Surround Sound system with Model Six speakers, rear speakers, a Sonv Pro Logic receiver and remote is only \$747. Call today and find out why Audio magazine said we may have "the best value in the world."

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TEST REPORTS

tribute to the overall sound quality in the same way as the output of the woofer cone. In any case, the cone's response was flat within ± 3 dB from 85 to 800 Hz but dropped steeply at lower frequencies (where the port output predominated).

The composite response curve sloped down (above the woofer range) by about 5 dB from 2 to 4 kHz and remained very smooth and flat (within ± 1 dB) from 4 to 11 kHz. There was a slight 3-dB peak (probably the tweeter resonance) at 13 kHz, and response returned to the average high-frequency level at 20 kHz. Quasi-anechoic MLS ground-plane on-axis response measurements showed a variation of less than ±3 dB from 300 Hz to 20 kHz.

Although the DF-661's rated impedance is 6 ohms, we measured a minimum of 3.2 ohms at 230 Hz, and the impedance remained below 6 ohms from 120 Hz to 7 kHz. A 4-ohm rating would be more realistic. The impedance rose steadily at frequencies below 200 Hz, reaching 20 to 24 ohms in the octave from 20 to 40 Hz. That characteristic suggests that the speaker's response was deliberately rolled off at low frequencies, perhaps to limit woofer excursion, and thus distortion, or to make it more compatible with subwoofers.

The tweeter's horizontal dispersion was typical of 1-inch domes, with the output 45 degrees off-axis diverging from the on-axis response above about 7 kHz. The off-axis response was down (relative to the on-axis response) less than 4 dB at 10 kHz, 7 dB at 15 kHz, and 13 dB at 20 kHz.

Sensitivity was 88 dB sound-pressure level (SPL) at 1 meter, as rated, with a 2.83-volt input of random noise. With an input of 3.56 volts (corresponding to our standard reference output level of 90 dB SPL), the woofer distortion was lower than we have measured from other speakers with a similar driver complement (as well as from many far larger speakers). From a maximum of 10 percent between 20 and 30 Hz, distortion fell smoothly to 1.5 percent at 60 Hz, 1 percent at 70 Hz, and less than 0.5 percent between 90 Hz and 8.3 kHz. The lowest distortion reading, 0.23 percent, was at about 300 Hz.

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We also measured the woofer distortion using the FFT spectrum-analysis feature of our Audio Precision System One. With 2.83 volts input at 100 Hz, the major distortion component was a third harmonic at -50 dB (0.3 percent). The second harmonic was at -60 dB (0.1 percent), and all others were at lower levels. Those are impressively low readings; for example, a roughly comparable speaker tested in the same way yielded a third-harmonic reading of about 1.1 percent and a fourth-harmonic level of 0.15 percent. A similar measurement of the DF-661's midrange distortion revealed only 0.1 percent third harmonic and 0.05 percent second harmonic.

Finally, pulse power tests with single-cycle sine waves at 100 Hz, 1 kHz, and 10 kHz clipped the output of the amplifier before the speaker's output waveform became seriously (audibly) distorted. This test subjected the speaker to momentary inputs of about 700 watts at the higher frequencies and 1.200 watts at 100 Hz!

We listened to the DF-661 speakers both alone and with subwoofers (not Velodynes, as it happened). Their sound was well balanced and unstrained, and clearly covered essentially the full audible frequency range. Used alone, they certainly had no lack of bass, but adding the subwoofers enabled the DF-661 system to create a seamless spectrum of sound from the deepest bass to above most people's hearing range.

Regarding the manufacturer's views on the importance of low speaker distortion, we have some minor reservations. Of course, low distortion is always desirable, but with most speakers we have heard and tested, we doubt that reducing their nonlinear distortions by a factor of several times (corresponding to the differences we measured between the DF-661 and some other good speakers) would make a significant difference in their sound. Nonetheless, the DF-661 certainly substantiated Velodyne's claims of low distortion (allowing for differences in test conditions), and it proved itself, whether for that reason or others, to be a fine, highly listenable system, with or without the assistance of a subwoofer or two.

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CH-CH-CH-CHANGERS!

B. B. B. B. B. B. B.

BY DANIEL KUMIN

1 8- 5- 8- B- B. Ev BY E. De Dif De Di 10 MB-1s-Nakamichi ł LTE L 880 880 DISC 0 1 8 8 PIONEER PLE-TYPE COMPACT DEC PLAYER PD-F100 CDFue DE RACK 2 RACK 3 RACK

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PHOTO BY DAN WAGNER

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The CD player turned ten in 1992, but we'll have to wait until 1996 to celebrate the CD changer's tenth anniversary. Yet since Pioneer introduced the world's first multidisc player in 1986 —a so-disc, magazine-loading model---the popularity of changers has grown dramatically. How e changers now outsell single-disc players by a comfortable margin, and given the riotous variety currently evailable, the momentum is unlikely to slow anytime soon.

And why should it? Clearly, American music lovers have embraced the changer concept for its extended-play, hands-off convenience. Today there are changers for virtually any system or budget—with disc capacities of five, six, seven, ten, twelve, eighteen, twenty-four, fifty, a hundred, and more. But capacity and convenience are only part of the changer story; different designs offer different acventages—and disadvantages.

Magazine-type changers that hold six or ten CD's in a snap-in cartridge were the first multidisc players and are still widely available. But the carouzel design, introduced in 1988, almost instantly eclipsed the magazine type in popularity. Carousel changers hold five (cr. in a few cases, six) discs in a rotating platter on top or in a slide-cut drawer; the platter turns until the selected CD is in place above the player's drive mechanism.

In the past year or two, several other multidisc configurations have emerged. Jumbo changers that held fifty or a hundred CD's have hit store shelves at popular prices (well, mcre or less), and they show every sign of catching on, big-time. One maker offers an in-between solution, a twentyfour-disc changer that's comparable in price to many five- and six-disc carousel players. In response, at least one other maker has developed magazine changers that hold two or three magazines at once, doubling or ripling their disc capacity. Finally, at least two makers offer "stocking" changers that swallow up to seven d scs without a magazine or a carousel.

Before we go any further, let's get one thing straight. Despite what you may have been told, once a CD changer—any type of changer—moves the selected disc onto its duive spind e, it is functionally identical to a singledisc player. Changers utilize exactly the same sorts of optical pickups, servo-control circuits, digital-to-analog (D/A) converters, and digital and analog filters as single-disc models, so there is no inherent sonic penalty for multidisc convenience. A topflight changer should sound just as good as a topflight single-disc player. Likewise, a really cheap changer will sound no worse than a cheesy single-disc player.

Changers do, however, tend to cost more than comparable single-disc players simply because a changer is essentially a single-disc player *plus* a multid sc mechanism. But the price differential isn't necessarily all that steep: The least expensive carousel changers, for example, cost only about 25 percent more than rock-bottom single-disc players, which is remarkable considering that it's the mechanical parts in audio gear that usually account for most of the cost.

Mobile Magazines

Magazine changers were created largely as ε bridge between car and home Eudio The idea was that a sixor ten-disc magazine loaded with your favorite CD s could be transported between same-brand changers in your car and home systems, and that approach is just as valid today. Extra magazines vpically cost about \$20, and a collection of them preloaded by artist, mood, or some other personal scheme makes for grab-and-carry convenience when moving CD's between car and home. Even if you have a factory-installed car changer bearing the automaker's badge, it'll be compatible with home changers from one or another cf the major audio companies that make both car and home models and supply gear to the automakers.

But the lure of magazine changers goes beyond the mobile connection. In addition to erabling you to group discs by music type or whatever, many models inccrporate a multimagazine memory that lets you program "permanent' play sequences for a number of different magazines. As long as the CD's in a particular magazine are kept the same, your programmed sequence is automatically recalled whenever that magazine is loaded.

Despite the format's waning popularity, magazine changers are still available from a number of companies. Pioneer's lineup even includes models that accept two or three jukeboxes—take your pick. Today there's a changer

Magazines,

carousels, CD

for every system

and budget.

Facing page, from top: Nakamichi's MusicBank MB-1s (\$799), a seven-disc changer with an internal six-disc stocking mechanism; the Philips CDC-935 five-disc carousel changer (\$300), featuring a program memory for 256 CD's; Pioneer's PD-F100 100-disc changer (\$715), which has four twenty-live-disc compartments.



The Denon DCM-560 five-disc carousel (\$600) lets you swap four dlscs while the fifth is playing. It has a favoritetrack memory for 100 discs, three random-play and five repeat modes, a coaxlal digital output, and a remote with a volume control.

Kenwood's DP-M5560 "6+1" changer (\$229) combines a sixdisc cartridge and a single-play drawer for on-the-fly operation. It features a 1-bit D/A converter, twenty-track programming with display, random play, and a remote control.





With Sony's CDP-CX151 100-disc changer (\$999) you can group CD's In ten different categories and program a favorite track sequence for each CD that is automatically recalled whenever It is selected. A jog dlal Is used to label disc slots and select CD's.

The Marantz CC-52 five-disc carousel (\$349) lets you swap two discs while the fifth is playing. It features thirty-twotrack programming, random and repeat modes, a 1-bit D/A conversion system, an optical digital output, and a multifunction remote control.



six-disc magazines, for capacities of twelve or eighteen discs. If you have a substantial library of CD magazines, multimagazine changers represent a useful compromise between the single-magazine configuration and the newer high-capacity changers holding fifty to a hundred discs.

The Achilles heel of most magazine changers, of course, is that playing a single disc requires ejecting the cartridge, taking out a disc, and replacing it with the new one—often a rather fussy procedure—and then reloading the magazine. At least two companies offer a way around this annoyance: JVC and Kenwood make "6+1" changers with a loading slot for a sixdisc magazine and a single-disc drawer. You can freely mix selections from the magazine and the drawer, and the single-disc tray is convenient for spurof-the-moment listening.

Clever Carousels

For most buyers, however, the carousel format has clearly won out. (Carousel changers have even become standard in many one-brand rack and shelf systems.) Why is the carousel so popular? Compared with a magazine changer, it's quicker and easier to change loaded discs, and disc-to-disc access times are typically about twice as fast. Another big attraction, a Yamaha innovation now available in various forms from most manufacturers, is being able to swap several discs while another one is playing-ideal for marathon work sessions or allnight parties where the music must play on uninterrupted. Finally, top- or drawer-loading carousel changers (the latter now dominate the rotating ranks) are available in almost every major brand at remarkably reasonable prices. On any weekend in any major metro area, you can probably find a carousel model on sale for around \$200.

Two interesting wrinkles come from Technics and Onkyo. Technics recently introduced a \$300 carousel that reduces the time between selections on different discs to as little as 3 seconds by storing music in a 4-megabit Memory Reserve. And Onkyo offers several players, ranging in price from \$320 to \$650, that squeeze a six-disc drawer-loading carousel into the space occupied by five-disc trays in almost all other designs. Onkyo's six-disc carousels are about an inch larger than most other carousels, but otherwise their layouts are similar to typical fivedisc machines. The trick is accom-



Onkyo's DX-C606 carousel changer (\$480) boasts a platter that accepts six discs instead of the usual five. You can change three discs without interrupting playback and store a forty-track playback sequence in memory.



The door in the upper corner of Madrigal's Proceed CD Library (\$12,000) provides access to its 100-disc carousel. Once CD information is in the system, you can search for discs by title, artist, or any of up to fifteen categories of your choice. You can also create your own playlists. An infrared controller with a large LCD panel (not shown) is supplied.

With NSM's Model 3101FPS 100-disc changer system (\$3,250) you can create ninety-nine playlists, each with up to 100 selections. The control unit has a single-disc drawer, two digital outputs, and a remote control.



plished by crowding the discs a bit closer and leaving less space at the outside edge of the tray.

Although Pioneer originated the sixdisc magazine format for both the home and car, and is still its most active booster, the company also offers one of the more unusual carousel variations, the "combi-changer." The \$770 machine has a platter with cutouts for five CD's *or* a 12-inch laserdisc—a clever example of single-unit, multimode engineering.

Stocking Stuffers

If you want extended-play capability without having to fool with loading magazines and without giving up the convenience of a single-disc player, there's Nakamichi's MusicBank line of single-drawer hybrid players. Employing internal stocking mechanisms that hold six CD's, the machines look like ordinary single-disc players, but when you place a disc in the tray it disappears into the bowels of the unit, where it joins up to five companions, And when the stocker is filled, you can play a seventh disc from the tray. There are currently four models in the MusicBank line, ranging in price from \$400 to \$800.

The main drawback to the stocker design is that it takes longer to load and unload discs than even a magazine changer. But once the discs are loaded, the Nakamichi mechanism is remarkably speedy at changing them. The upside, of course, is that you don't have to buy and store magazines. Currently, high-end stalwart McIntosh Labs is the only other manufacturer offering a seven-disc stocking changer, though similar mechanisms are used in some shelf systems.

Multidisc Mania

Until someone comes up with a two-tray carousel changer-don't laugh, it's bound to happen someday-greater disc capacity requires fresh thinking. Fisher put a new spin on the changer configuration with the Studio 24 CD changer it introduced last year, which boasts an internal carousel that holds twenty-four discs. Discs are pulled one at a time into the carousel through a vertical opening in the center of the front panel; the bidirectional carousel rotates a selected disc to a drive-and-pickup assembly tucked in a corner, which plucks the disc from its slot-much like a Seeburg jukebox of the early 1960's.

In addition to standard CD features

One of the big attractions of jumbo changers is on-line storage. Your CD collection (or a big chunk of it) stays in the player, ready for playback—no more hunting for a particular disc.

like random play (from all discs or just one) and repeat (of a track, a disc, all discs, or all discs in a selected category), the Studio 24 has lots of library and recall functions so that you can categorize (and subcategorize) CD's by genre, artist, mood, and so on. You can also create your own master mix. stringing together up to forty-eight tracks from any of the twenty-four discs and storing the sequence in memory. The Studio 24 changer is eminently affordable at \$300 (reduced from its original suggested retail price of \$500), and even though it's 2 or 3 inches taller than most conventional carousel or magazine changers, its front-loading design lets it be placed on a shelf; in fact, Fisher is now packaging the Studio 24 in several of its rack systems.

Several companies, including Madrigal (through its Proceed brand) and Germany's NSM, have offered 100disc changers for years, but they have all been big-buck professional designs adapted for home use. Sony trumped the jumbo-changer hand last year with the first reasonably priced 100-disc changer, now available in \$1,000 and \$1,200 versions. Sony's system is similar in overall mechanical concept to Fisher's twenty-four-disc changer, but the larger, top-loading design provides direct access to the carousel, which is visible, not concealed as in the Fisher unit. A see-through pop-up hatch on the top cover opens a twelve-disc-wide port for loading and unloading CD's. A clever rotary jog dial with an Enter key at its center (duplicated on the remote control supplied with the \$1,200 changer) is used to locate discs and execute playback or programming routines; it also serves as an alphanumeric dial for creating text labels for discs or scrolling through disc listings stored in memory.

Discs can be labeled and selected by title, music genre, artist, and so on, and a playlist can be designated in virtually any way you can imagine; random-play and repeat functions can also address selected disc sets or all discs in the carousel. Of course, as with all memory-based programming routines, the downside is that you must enter the text for each disc label (or labels) by hand. (Unfortunately, there was no provision in the audio-CD standard for text, a major oversight that it's too late to rectify today.)

JVC joined the jumbo-changer ranks earlier this year with an interesting two-piece player that manages to come in at \$1,000. One part is a control box that looks like a conventional single-disc CD player, but without a disc drawer, and the other is a 14-inchsquare stacking changer that holds a hundred discs in thin, slide-out carriers; the two components are linked with digital signals via a coaxial cable. The rationale behind the two-piece approach is that you can conceal the actual changer (which effectively becomes a CD library) in an audio cabinet or some other space.

In addition to letting you assign an eight-character label to each disc (Sony's 100-disc changer permits thirteen-character labels), the JVC system lets you store a thirty-two-track playlist and up to ten sixteen-disc lineups in memory. JVC's wrinkle is that you can key in the eight-character album title to select a disc by name rather than the number of its loading slot. The system includes a remote control with an LCD window that displays disc labels.

One big attraction of jumbo changers, of course, is on-line storage. Your CD collection (or a big chunk of it) stays in the player, ready for playback—no more hunting through files or shelves for a particular disc. Sony even makes it possible to daisy-chain several of its 100-disc changers and



The top-of-the-line Technics SL-PD1000 five-disc carousel changer (\$300) reduces the time it takes to switch between selections on different discs to as little as 3 seconds by storing music in a 4-megabit Memory Reserve.



Yamaha's CDC-845 five-disc carousel (\$499) shortens track-switching time in random-play and programmmed-play modes by memorizing a disc's contents on the first pass.

Fisher's Studio 24 changer (\$300 with remote) has a Juke-box-like carousel that holds twenty-four CD's. Discs are loaded one at a time through the vertical opening and can be classified under preprogrammed labels (Jazz, Rock, etc.) or user-assigned labels.



JVC's XL-MC100 two-piece, 100-disc changer system (\$1,000) has a control unit (below) that resembles a conventional single-disc CD player, but without a disc drawer, and a 14-inch-square stacking changer (right) that holds discs in thin, slide-out carriers; the components are linked digitally via a coaxial cable.





SHOPPING TIPS

Shopping for a changer is not so very different from shopping for any CD player. Don't be swayed by arcane technological claims or by fancy features that may not translate to real-world utility. But changers are a category where shopping a bit higher on the model tree for intrinsic quality may make sense. Like any continuously used mechanical appliance, a well-made changer is likely to last longer, with less trouble, than a flimsy one.

Here are a few more considerations to keep in mind:

Magazine Changers.

If you want compatibility with a car changer, make dead certain that the home changer you select uses a magazine that will fit in your car changer. Not all six-disc magazines are the same, so try before you buy. And if you plan to store lots of discs in magazines, be sure to inquire about the availability and cost of extra magazines.

Loading (and unloading) discs into the magazine can be the least enjoyable part of owning a magazine changer. Take a few discs to the store and have a go at loading and unloading them before you buy to insure that it's not too annoying a task.

One of the biggest differences among magazine changers is in disc-change time. Make note of how long it takes a prospective model to change between the first and last discs in the magazine and between adjacent discs; compare the times of a few competitive models. Also, in a noisy store it's easy to overlook mechanical racket during the disc-change process, but at home on a quiet evening it may drive you nuts. Listen for mechanical noise before you make a decision.

Carousel Changers.

The question of disc-change time applies here, too, although carousel changers are

typically faster than magazine models. Put a few machines through their paces to get a feel for how quickly they go from one disc to another. Also be sure to listen for mechanical noise; some carousels produce alarming ratchety sounds that may grow tiresome after a few days.

Almost all carousels let you swap from two to four discs while another continues fo play. If that seems important to you, check out the swap-count.

Disc-display modes: With a drawerloading changer it can be tough to remember what's in there. An easily understood display that graphically shows which disc positions are loaded, and which one's in play, can save time. (Actually, the same goes for magazine changers too.)

• Jumbo Changers.

Trying to locate a 2-minute pop-song needle in a 100-CD haystack may prove a stiff challenge. So disc-hunting, cataloging, and playlist features are among the most important attributes of a high-capacity changer. Investigate cataloging and programming routines before settling on a particular model. (Also check out the system supplied to keep track of CD booklets. Most jumbo changers include some sort of notebook to organize them.)

Another thing to examine, assuming that a jumbo changer will be your only player, is whether you can easily play a lone disc. Sooner or later you'll want to play just one. Does the changer make that easy to do, or is it a hassle?

Finally, does it fit? Remember that if you install a high-capacity unit in a cabinet or on a shelf, you'll still have to reach the disc-loading dock from time to time. Toploaders will have to be placed on top of a cabinet or on a slide-out shelf—just make sure you have enough clearance. —D.K. control them all from a single "master" changer.

One disadvantage of high-capacity changers, though, is that they make playing the occasional stray disc a bit trickier than just popping it in and hitting the play button. Pioneer addresses that problem in one of the two jumbo changers it introduced earlier this year. The odd-looking 50+1-disc changer (housed in a boxy 10¹/4-inch-wide cabinet that would complement many minicomponent systems) features a vertical loading slot for on-the-fly disc playing in addition to a fifty-disc CD bank. The changer section of the \$615 unit stores the discs horizontally in a pair of side-by-side rolling racks, each holding twenty-five discs; the racks are concealed by a flip-down front panel. The selected disc is moved to the CD transport by an internal pickup sled that slides rapidly along the racks. (A fringe benefit of the front-loading design is that the changer can go on a shelf or in a cabinet.)

For \$100 more, Pioneer offers a 100-disc changer with *four* twenty-five-disc racks. The single-disc loading slot is omitted in order to fit the horizontally aligned racks into a standard-width chassis (it's $7\frac{1}{2}$ inches tall). Both models are equipped with remote controls and memory functions that let you categorize discs by assigning custom labels to them. For those who want even more, Pioneer offers a companion controller that can operate up to three 100- or 50-disc changers and provides more elaborate programming functions and display modes.

hither CD changers? As long as car changers remain popular-and that should be for the foreseeable future-magazinestyle home changers will be with us, though probably in diminishing numbers. In their place, carousel models will continue to grow in features and affordability, virtually replacing single-disc players in shelf and rack systems. Look for the jumbo ranks to swell rapidly over the next year or two, and for their prices to come down, if only a little. Five or ten years from now, it may well be that keeping all of your discs instantly available will cost little more than a furnituregrade conventional storage system; you'll simply add 100-, 200-, 300-, or who-knows-how-many-disc modules as your collection grows. Which raises a question: What will we do with all those empty jewel boxes?
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CD FIX-ITC: DO THEY WORK?

"Perfect Sound Forever" was the advertising slogan Philips used to support the launch of the compact disc format a dozen years ago. The implication, of course, was that compact discs were virtually indestructible. And when CD's were compared with the fragile vinyl records they were destined to replace, the ad slogan seemed plausible enough. No wear from physical contact? No grooves to scratch cr gunk up? The hightech CD format was such a racical departure from the old stylus-in-the-groove approach to music reproduction that it scemed almost too good to be true.

Without question, a CD is a magnificent piece of engineering. A 60-minute d gital audio recording comprises over 5 billion bits of information; when you add in information for the CE system's error correction, synchrorization, and modulation, some 15 billion bits are needed to store and play the recording. A CD handles all of those bits with ease, while adding many perks such as random access, small size, convenience of use, robustness, and ease of replication. Best of all, the system is an optical one. Playing a CD causes no more wear to the recording than your reading causes to the words printed on this page.

On the other hand, it's a cruel, cruel world out there. The many $\exists v i$ is that have always attacked mechanical-groove recordings, such as dust, dirt, and scratches, are all potential dangers to ϵ CD. The danger, in fact, is considerably greater for a digital re-



cording because of the incredible density of the data. The pit formations that hold the data are amazingly small much smaller than we large humans can appreciate. One pit is some 700 times smaller than a pin prick. And the spiral pit track would, if uncoiled, stretch for $3\frac{1}{2}$ miles.

Clearly, although it was designed to withstand rigors that would render an LP unlistenable, the CD is far from immune to damage. Severe scratches can cause audible skipping and dropouts—or, worse, make a CD unplayable. Even carefully handled discs accumulate fingerprints, dirt, dust, and scratches that can eventually impede the laser's ability to accurately "read" the data on a disc. In extreme cases, such wear and tear can even confound a player's error-correction system (see "CD: The Inside Story," page 74).

A number of manufacturers offer CD maintenance kits containing, among other things, special solutions designed to clean or protect discs and repair surface scratches. But how well do they work? No solution can make a CD better sound than it did new, of course, but is it possible to bring dirty or damaged discs back up to factory snuff?

To find out, I assembled half a dozen of the best-known kits and evaluated them using a CD "torture test."

The Candidates

 Allsop Model 18613 CD Finishing System (\$25). The kit contains a 2-ounce bottle of polishing fluid (made of natural solvents, apricot oil, lemon-seed oil, and "micro quartz" abrasives), a half-ounce jar of wax (made of vegetable fat and a mixture of coconut and banana oils), and two polishing cloths. The polishing fluid is designed to break down surface contaminants and remove scratches. The wax is primarily protective, creating a hard, antistatic surface that is said to help prevent new scratches. [Coincidentally, as we went to press with this article, Allsop said that it was discontinuing the Model 18613, but the product is probably still available in many stores. -Ed.]

• Bib A-655 Compact Disc Restorer Polish (\$20). Packaged in a plastic case, the kit comprises a halfounce spray container of polish and a polishing cloth. The pressurized aerosol canister, a bit larger than a tube of lipstick, is said to contain enough fluid for 600 measured doses (one pump treats one disc). In addition to cleaning and polishing, the fluid is said to remove light scratches and decrease static build-up, which attracts dust.

• C/D Magic CD 2000 (\$10). Available in a 1-ounce bottle that contains enough fluid for forty applications, CD 2000 is described as an all-in-one formula that "cleans, polishes, protects, and repairs discs." C/D Magic says the solution creates a "molecularly bonded" shield that protects the disc from scratches and contains "spaceage particles." A note on the label cautions that the solution contains "aliphatic petroleum distillates" and warns against using heavy pressure on a disc's label side. No polishing cloth is provided.

• Discwasher CD-2 CD Polish and Scratch Remover System (\$13). The kit comprises a 1-ounce bottle of CD-1 cleaning fluid, a 1-ounce bottle of CD-2 polish and scratch remover, and a jewel box containing six Q-Tip-like swabs and four woven-fabric polishing cloths. Discwasher says that there's enough of each solution for about fifty applications.

• Memorex CD Repair and Maintenance Kit (\$13). Packaged in a jewel box, the kit includes twelve foil packs, six with an isopropyl-based cleaning solution and six with a polishing solution containing alumina, along with a polishing cloth and four squares of wet sand-



paper, each with a different grade of grit. Although each foil pack contains enough solution for two applications, it may be a little messy to save half a pack. The instructions. packed like CD liner notes, describe how to polish a dirty disc and how to select a sandpaper grade according to the severity of scratches.

• The Lost Factory Compact Disc Cleaner/Treatment (\$17). Available in a 1-ounce aerosol pump bottle, the solution is said to repair "most surface abrasions and minor scratches" as well as to remove a variety of residues, including oils, salts, and acids. The company says that single applications clean and protect a CD's surface, and multiple applications address scratches. A polishing cloth is included.

The Torture Test

To evaluate these products, I used a series of test pressings of a 1-kHz sine wave that were made at a CD factory. The discs were pressed sequentially from the same batch of polycarbonate under identical molding conditions. That assured as level a playing field as possible since the hardness and reflectivity of the discs were very similar if not identical.

The first part of my evaluation involved the rather undemanding task of using each product simply to clean and lightly buff a test disc that I had abused with greasy fingerprints and a little house dust. All of the solutions did a good job of removing dust, dirt, and fingerprints, and they can clearly be recommended for that purpose. Being of the "If it ain't broke, don't fix it" school of thought, however, I don't recommend cleaning your entire disc collection just for the sake of cleaning it. Not only is it very time consuming, but I'm not convinced that cleaning a CD without good cause (read: filthy) does any good. And in the back of my mind, I worry about the possibility that a cleaning solution could be absorbed by a disc's polycarbonate and eventually cause an unfortunate chemical reaction. Still, if you're so motivated, these products are all fine cleaners.

Next I applied a very light scratch to each of the six test pressings, running it perpendicular to the spiral pit track



The typical home theater system consists of a subwoofer, left and right stereo speakers and a center channel speaker. Not hard to spot are they?

without the Big Speaker.



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(radial). Although the scratches were plainly visible, my Philips CD-80 CD player handled each disc without skipping a beat. Then I used each solution to buff one of the scratched discs. Again, each product performed as advertised, although it took somewhat longer to remove the scratch with the Bib and Last Factory solutions than with the others. There's no great secret here: The polishing compounds used by Allsop, C/D Magic, Discwasher, and Memorex are slightly more abrasive. As the Grand Canyon majestically demonstrates, even running water, given enough time, will cut its way through rock. But in the case of CD repair, it's important to complete the job in somewhat less than 100 million years, so abrasives that will remove scratches without further damaging the disc surface are needed.

It was time to move on to the next tier of torture, so I applied multiple radial scratches that were deep enough to cause the player's laser to skip badly. Although the method was inexact, I tried to make the scratches on each disc the same depth and length.

With a fair amount of effort and multiple applications, 1 was able to buff out all but the deepest portions of the scratches using Allsop's brown polishing solution. The disc was returned to playable condition, with only a mild skip or two. Although the solution is mildly abrasive, it didn't scuff the area surrounding the scratches.

Bib's clear polishing solution seemed to be virtually nonabrasive an observation supported by a statement in the instructions that the liquid can be used to polish the fragile label

side of a disc. After multiple applications, and a lot of effort, 1 succeeded in rubbing away only the shallow portions of the scratches; playback was improved, but skipping remained a problem.

The white C/D Magic polishing compound did an excellent job of buffing out the scratches, and with relatively little ef-

fort. Although the deepest portions of the scratches remained visible, the disc played without skipping. The area surrounding the scratches remained shiny, suggesting that C/D Magic has just the right abrasive—

ALL OF THE Solutions Removed light Scratches from Test CD's.

gritty enough to neutralize a fairly nasty scratch without inflicting further damage.

Discwasher's mildly abrasive brown polishing compound succeeded in removing most of the scratches, but only after a lot of buffing. While the most severe scratches remained visible, the disc played without skipping.

The Memorex kit is the most serious of the six tested. As any carpenter or gemstone polisher knows, the most efficient way to smooth a material is to start with a hard abrasive, then gradu-

ally work your way down to mild abrasives. While even a mild abrasive will eventually do the job (the Grand Canyon example again), it's faster to start with abrasives that attack the material's roughness directly, then work to remove the scratches you've added. Because my test scratches were relatively light, I started with Memorex's least abrasive sandpaper (#3). I

quickly rubbed away even the deepest portions of the scratches, but the surrounding areas became badly scuffed. The marks were easily removed by buffing the area with the white polishing cream and a cloth. When I finished, the surface was smooth and shiny and the disc played perfectly.

Like the Bib polish, the Last Factory's clear fluid appeared to be virtually nonabrasive. I succeeded in removing some of the shallow portions of the scratches, but only after considerable effort and multiple applications; the medium-level and deeper portions remained. The disc barely played, with considerable skipping.

The next stage of my evaluation was an acid test. I took six new test pressings and applied a series of closely spaced, deep, and wide radial scratches to each one. Of course, the gouged portions of the discs were completely unplayable. Allotting 10 minutes for each repair, I went to work using the six repair kits. After laboring over each scratch, I achieved results that were similar to those of my previous scratch-

removal efforts. The Memorex kit's #1 ("mildly coarse") sandpaper, followed up with #2, #3, and the polishing compound, removed nearly all traces of the scratches, and the disc was again playable. (The kit also contains a coarse "X" grade of sand-

paper intended for use only with very deep scratches.) C/D Magic's polishing compound did a good job of reducing the deep scratches, but its less abrasive solution was unable to remove all traces of the scratches in the allotted time; still, the disc was playable without skipping. The Allsop and Discwasher compounds left the deep scratches, and the Bib and Last Factory solutions had little effect on these gouges, so those four discs remained unplayable.

Finally, out of curiosity, I attacked one CD with a vengeance, cutting very deep scratches into its playing surface. Then I went to work using the Memorex kit to see if I could restore the disc to playable condition. After much sanding, I succeeded in removing the scratches, but the disc still would not play. Apparently too much of the disc substrate had been removed, and the laser could not focus properly in the depth that remained. In other words, there's a limit to the extent of the damage that can be repaired.

CD: THE INSIDE STORY

very CD starts out as a piece of transparent polycarbonate plastic (the same stuff used to make football helmets and bulletproof windshields). Digital bits of data representing the music are then molded on the top (label side) of the disc in the form of microscopic pits. The pitted surface is coated with metal (usually aluminum) that reflects the laser beam from the CD player's optical pickup, which sees the data pits as bumps because it's aimed toward the bottom (or playing) side of the disc. Next, an acrylic resin, cured by ultraviolet light, is applied to the metal layer to protect it. Finally, a label is printed on the acrylic layer.

What most people don't realize is that the metal and acrylic layers covering the data surface are extremely thin, making the label side of the disc far more vulnerable to damage than the playing side. A scratch on the label side can irrevocably damage the data. In fact, none of the CD maintenance kits we evaluated claim to be able to repair damage to a disc's label side—clearly an impossible task.

The playing side is less vulnerable to serious damage for two reasons: 1) It's protected by a relatively thick layer of plastic, and 2) when the laser spot hits the surface it's 800 micrometers wide but focuses down to a tiny fraction of that size (about 1.7 micrometers) by the time it reaches the data surface. Therefore, the effects of scratches or other obstructions on the playing surface are reduced along with the laser beam. In general, a CD player's error-correction system can handle small obstructions, like dust and dirt less than 0.02 inch in diameter, without audible consequence.

When it comes to scratches, some are more perilous than others. For example, a spiral or circular scratch that runs along the CD's pit track may obstruct a number of consecutive bits of music information (as well as the bits used to correct for errors), whereas a radial scratch that goes across the disc (center to edge) will affect only a small amount of data in each revolution, making it easier to correct.

Beyond individual scratches, an accumulation of trivial obstructions-dirt, dust, fingerprints, you name it-can wreak havoc by overloading a CD player's error-correction system (its legal limit is 220 errors per second). When that happens, the player will resort to error concealment, using nearby undamaged data to create an audio patch that approximates the missing data, or, in worse conditions, briefly muting the audio output. In the case of deep gouges and other major surface obstructions, the laser beam will likely lose the track entirely, which causes audible skipping. When any of these problems begin to appear, you know it's time to clean-or possibly repair-the disc.



The Bottom Line

As the CD torture tests demonstrated, each of the six repair kits has strengths and weaknesses, and they are best suited to different tasks. The Bib and Last Factory kits are better polishers than scratch removers. They do a good job of keeping discs clean and free of fingerprints, but they can repair only the mildest of scratches. The Allsop and Discwasher kits are also good for cleaning, but their slightly more abrasive polishing compounds are suitable for fixing somewhat deeper scratches. C/D Magic's CD 2000 polishing compound is very versatile: gritty enough to tackle tough scratches, yet mild enough to avoid adding new scratches to the surface. If you want a one-step product to buff out moderate scratches, it's the best bet.

But if you want to try to revive a disc that is badly scratched, the Memorex kit holds out the best hope. Its four grades of sandpaper and polishing cream let you quickly remove almost any scratch—even fairly deep ones—and then return the damaged area to its original shiny condition. A word of caution: Sanding should be done with extreme care and patience, or you may worsen the condition of the disc you're attempting to fix!

After all is said and done, I'm inclined to treat a CD repair kit as I would an automotive repair kit-for emergency use only. And what's the point of carrying around an emergency kit with wrenches that fit only half the bolts on your car? I'd put the Memorex kit on my shelf simply because it can repair the kinds of CD atrocities most of us are likely to come acrossand it works quickly to boot. Of course, whether it's your car or your CD collection, damage prevention is always better than repair. So think twice the next time you're tempted to use a disc as a beer coaster.

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O - S E R I E S

(EF Q-70

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* Quote excerpted from a review of the SRS (•) technology from the April 1992 issue of Audio Magazine. The Vivid 3D sound enhancement system won the Retail Vision "Best Product" award in May 1994, and the Innovations award from the International Consumer Electronics Show in June 1994. Vivid 3D systems incorporate SRS (•) technology which won the "Ultimate" award from Game Players magazine in July 1993. © 1994 NuReality. All rights reserved. SRS (•) is a registered trademark of SRS Labs. All product names are trademarks or registered trademarks of their respective holders. SR1

SURROUND - SOUND

You can put together a rudimentary "home theater" by just hooking up the audio outputs of a stereo VCR to a conventional two-speaker audio system, but even with a large-screen TV you won't get the full theatrical impact that even such a basic setup is capable of if you don't place your speakers carefully. And moving up to a full-blown home theater system with a Dolby Pro Logic A/V receiver, two surround speakers, a subwoofer or two, and a center front speaker won't necessarily make much difference if you still haven't figured out where to put the speakers.

S P E A K E R P L A C E M E N T

Properly locating home theater

speakers can make all the difference.

By David Ranada

I'll offer some specific placement sugges-





An acoustically transparent screen hldes the front speakers in a theater. (Key: L = left, C = center, R = right, S = surrounds, W = subwoofer.)



This speaker layout, with a 60-degree left/right spread, has been recommended for use in surround-sound tests for high-definition TV (HDTV).

tions later, which you can adapt to your listening room's shape and decor, but first let's look at the sonic reference for home theater, a real movie theater. Figure 1 shows a typical speaker layout for a movie theater with surround sound. The diagram illustrates three points about speaker placement that have important implications for home setups:

• The left and right front speakers are approximately as far apart as the picture is wide. The front speakers are usually arrayed *behind* a projection screen that has been rendered acoustically transparent by thousands of tiny holes. Since the three main front speakers (left, center, and right) are behind the picture, they can also be placed about halfway up the screen.

• A subwoofer does not have to be placed symmetrically in relation to the main front speakers.

• A typical theater has *lots* of surround speakers, and with the front speakers they do literally surround the audience.

Now consider another sonic reference, one that has a different set of implications for home setups. Figure 2 shows the speaker layout that has been recommended for official listening tests of the surround-sound encoding schemes for high-definition television (HDTV) systems. The three most important points here are:

• All the speakers are equidistant from the listener.

• The front speaker layout is based on the traditional, though not necessarily optimal, equilateral-triangle stereo layout, with the left and right speakers placed to make 30-degree angles with the listener, or a 60-degree spread.

• The surround speakers are not fully behind the listener but more to the sides.

Armed with those six surroundsound facts of life, we can attack the problem of setting up home theater speakers for best results. We'll start at the front.

Left, Center, Right

Deciding where the center speaker should go is easy. Regardless of its driver complement or layout, the center speaker should go as close as possible to the middle of the video screen. Some A/V equipment provides dual center outputs to drive two "center" speakers, which are supposed to be placed directly at either side of the screen. If you are tempted to go that



Try to get the center-channel speaker to line up vertically with the front left and right speakers and all three to be close to ear height when you're seated.

route for reasons of space or decor, first try the less expensive alternative of dispensing with a center speaker altogether and switching your surround decoder for "phantom" center-channel operation. Phantom-center imaging is good only for a small listening area directly in front of the screen, but it's better than that provided by dual "center" speakers. A single center speaker is still best.

Placing the left and right front speakers is more problematic, for unless you have a very large front-projection video system, the screen width will always be substantially smaller than the distance between the left and right speakers, unlike the setup in a movie theater. There's no way around this fundamental limitation of home theater without using a large-screen projection system.

But you do not have to stick with the traditional stereo angle of 60 degrees between the listener and the left and right front speakers. First, the traditional 60-degree angle is merely that, traditional. There is no combination of psychoacoustical and engineering reasons that dictates a 60-degree left-right spread. But there is psychoacoustical evidence that works in favor of the small-screen viewer. A narrower spread of only 46 degrees (23 degrees to each side) produces a minimum of "interaural crosscorrelation" for a listener at the prime location. Translation: At that angle the speakers are less likely to be heard as sound sources themselves, and the resulting sonic image is more likely to be determined by the qualities of the recording. That is precisely what you want in home theater: a narrower left-right spread to match the picture better, yet one wide enough to provide good recording-determined imaging for both movie

soundtracks and music. One speaker maker (NHT) believes so strongly in this approach that many of its stereo speakers are mirror-image pairs whose front panels are already angled for a 46-degree spread.

There's no need to be obsessively precise with any of these angles, but for the record, and as an aid to experimentation, you'll get a 60-degree spread when the left and right speakers make an equal-sided triangle with the listening position. For a 46-degree spread, space the left and right speakers 9³/₈ inches apart for every foot either one of them is away from the prime listening position. (And you thought high-school trigonometry would never be useful!)

You can also try a few often-ignored front-channel refinements. Recall that the front speakers in a movie theater are usually located about halfway up the back of the screen. Unless you,

Figure 4



A center speaker

the video screen.



The surrounds can be positioned farther away from you than the front speakers. Slde placement is recommended.

too, have a front-projection system with an acoustically transparent screen (a big-bucks proposition), if you try to do that at home you'll end up with the center speaker smack dab in the middle of your picture. Still, you should strive to make the distance from the middle of the center speaker to the horizontal line running through the acoustical middles of the left and right speakers as short as possible, and that line should be as close to the middle of the picture as possible (see Figure 3). If the height of the monitor can be adjusted, you might want to move it a little closer to the speakers' center line. But keep in mind that the Society of Motion Picture and Television Engineers (SMPTE) recommends that for critical viewing the center of a movie or TV screen should either be straight ahead or slightly below eye level (movie theaters are definitely less than optimal in this regard since many seats make you look up at the screen).

any home theater speakers especially Home THX and similar models—have deliberately restricted vertical sound dispersion. For best high-frequency performance, the acoustical centers of such speakers should always be as close as possible to the level of your ears *while you're seated*. If that is not possible with your speaker stands or furniture, try to tilt the speakers forward or back so that their front panels

Figure 5



A diagonal speaker arrangement can solve many layout problems and still provide excellent surround sound.

"aim" toward seated-ear height in the prime listening area.

While Figure 2 has the front speakers equidistant from the prime listening location, you can sometimes get very interesting results by moving the center speaker forward or back relative to the left and right speakers. But whether you get any improvements in tonal matching and image precision and accuracy depends on the particular speakers involved and the furniture near them (including the TV screen's sound-reflecting surface).

The Surrounds

No other part of surround-sound speaker setup is as confusing or as misunderstood as the placement of surround speakers. The misunderstandings extend to the controls, connections, and instruction manuals of most A/V receivers, which insist on calling the surrounds "rear" speakers. Sometimes the manuals even have speaker-placement diagrams showing the surround speakers in back of the listening position. But in many homes, putting speakers behind the listener is not practical. Fortunately, they shouldn't go there anyway.

In a movie theater, the main purpose of surround speakers is to provide an enveloping sonic environment that helps the listener "place" himself in the location shown on screen—the audio equivalent of a cinematic establishing shot. That's why there are surround speakers around three sides of the auditorium. At home, placing two surround speakers to the rear may heighten the effect of an occasional flyby, but with environmental background sounds, which often run more or less continuously, you'll end up with sonic holes on the sides—the sound from the speakers in the rear won't connect seamlessly with the sound from the three in front.

he solution is to place the surround speakers more to the sides than the rear, as in Figure 2. Manufacturers of dipole-radiating surrounds even recommend side placement directly on a line with listeners, so that they are in the null of the dipole radiation pattern. While it may be considered an ideal, you do not have to place the surrounds at the same distance from your listening position as the front speakers. For various reasons, placing surrounds at a reasonably greater distance (Figures 4 and 5) can even be advantageous. Furthermore, if your A/V equipment allows you to adjust each surround speaker's level separately, the surrounds don't even have to be at precisely the same distance or angle from the prime listening position (Figure 5). What you must do in any case is to carefully set the surround-speaker balances using the test tone required in all Dolby Pro Logic decoders, and you must reset the balances every time you change or move the surrounds.

If you still aren't getting good results out of your surrounds on program material that you know has substantial surround-channel content (not all movies do), you might want to experiment with less conventional layouts than those in Figures 4 and 5. Surround speakers can be mounted high up on the side walls or even on the ceiling, for example, taking to an extreme the general guideline that they should be at least as high off the floor as your standing ear height. You can try aiming the surrounds at various angles away from the main listening position. I have even heard of cases in which good sonic envelopment resulted from putting surround speakers on the floor at the sides and aiming them upward. Experiment.

Subwoofers

It's rare that you can plunk down a subwoofer at random and have it operate at its best. Usually you have to experiment with placement and level adjustment (preferably aided by some measuring equipment). That can get tiresome, but there are some basic guidelines to start your experiments off in the right direction. The most important rule of thumb in subwoofer placement is that you can generally ignore imaging considerations, because a subwoofer's crossover frequency is normally below 100 Hz or so. In fact, some asymmetry in subwoofer placement is almost always desirable.

Unless your subwoofer's manufacturer specifically recommends against it, a good location to start your placement experimentation is in or very close to a firm corner that itself is close to either your listening position or the front speakers. By "firm" I mean a corner whose walls don't flex much and that is not close to a large opening in the room, such as a hallway or open door.

A corner location for a subwoofer is something of a theoretical ideal, since it will activate the most significant room resonances equally, which is usually better than the haphazard activation of only a few significant resonances that you'll get with any other location. Corner placement also automatically boosts low-frequency output, so unless you pay careful attention to the level of the subwoofer output, you may get too much of a good thing (a common error in systems not adjusted with the aid of measuring equipment). For the L-shaped room in Figure 6, and assuming that the main listening area is in the upper left side of the room, I'd try Positions 1 and 2 first and, because of the doorway, Positions 5 and 6 last.

In order to avoid sonic nulls, don't put a subwoofer precisely midway between parallel walls. If you were using the right side of the room in Figure 6 as the main listening area, I'd recommend trying the corners first and Position 4 last. If you are lucky enough to have more than one subwoofer, always a good upgrade, you may want to try placing one of them away from a corner. In that case asymmetric placement in the room could help by canceling resonances and nulls (Position 3), although taking measurements is unfortunately the only efficient way to assess any improvements.

Finally, here are two general-purpose subwoofer hints. First, take advantage of the reciprocity principle: If you exactly swap the locations of a subwoofer and a listener in a room, he won't be able to hear a change, espe-



First try the subwoofer in a corner (Position 1 or 2). Keep it away from large openings in the room walls (Position 5 or 6).

cially at low frequencies. To take advantage of that principle in deciding on a final subwoofer location, place the subwoofer and either the left or right front speaker at your listening position, preferably with the subwoofer at seated ear height. Then aim the front speaker at each of your various prospective woofer locations in turn while playing some well-recorded music, crawl to each woofer location with your head near the floor, and listen for the bass balance. That may look crazy, but, hey, you're an audiophile in search of peak performance. Besides, it's easier than hauling a typical subwoofer around the room.

Second and last, remember that you can obtain significant changes in bass performance by relatively small (2- or 3-foot) adjustments in your listening position. If you are listening close to a wall and getting too much bass, for instance, move your chair farther out into the room (or pull the subwoofer away from its closest wall).

These woofer-placement guidelines are only the basics of a fascinating and complex subject, which we'll cover in more detail in a future issue. In the meantime, experiment—and don't be afraid to move the furniture, too!



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We had to dig deeper than usual to find the gems at the 1994 Summer Consumer Electronics Show held in Chicago in late June, the last of the traditional summer shows that have been held every year since 1967. The Electronic Industries Association (EIA) is replacing the show with CES Interactive, a multimedia/game-oriented tradefest scheduled for Philadelphia next May. (Winter CES will remain the preeminent showcase for new audio and video products.) There may still be a place in the Windy City for a small A/V confab, however. As we went to press, Thiel and Conrad-Johnson were close to sealing a deal with the EIA for it to host a smaller A/V show in Chicago next June.

As some 37,000 manufacturers, distributors, retailers, and journalists bid a nostalgic farewell to Summer CES, they also welcomed the nation's first high-power directbroadcast satellite (DBS) service. The Digital Satellite System (DSS), a \$1 billion venture launched by RCA, the DirecTV subsidiary of GM Hughes Electronics Corp., and Hubbard Broadcasting, entered the first phase of its national rollout during the show. Showgoers flocked to RCA's booth for a firsthand look at the programming delivered via the 18-inch satellite dish and receiver.

Another highlight with historical significance was the announcement by International Jensen that its Special Audio Group, which includes NHT, will preside over the revival of the forty-year-old Acoustic Research brand. The first three models in a new back-to-basics AR line of six bookshelf speakers, ranging in price from \$200 to \$1,200 a pair, were slated to hit store shelves in September. Elsewhere in speakers, Cerwin-Vega previewed its six-piece System 8 home theater package (\$1,480), featuring a 12-inch dual-voice-coil sub-



Spheric's Krystol System II

woofer. Recoton and Chase Technologies introduced inexpensive 900-MHz wireless systems, with Recoton's \$430 System W450 four-piece home theater package the standout. In the oddball department, Spheric Audio made a splash with its \$700 Krystol System II speaker (inset) featuring a glass Uniglobe with a tweeter *inside*.

Marantz introduced the one-piece EC-500 Dolby Pro Logic preamp-tuner with a built-in CD player (\$1,099), and Carver hinted at plans for lower-price versions of its impedance-independent Lightstar amplifier. Carver's founder, Bob Carver, who recently left his namesake firm to form another company (as yet unnamed), unveiled the \$2,000 Sunfire amp, rated to deliver 2,400 watts into 1 ohm. And Sony previewed a 360-degree surround headphone system.

On the A/V scene, the New York City-based Captain of America company conducted the first U.S. demos of the "high-definition" W-VHS videotape system that JVC sells in Japan. The deck, available through Captain for \$10,000, features an HDTV recording and playback mode and is said to play and record VHS and Super VHS tapes with enhanced quality. Proton unveiled its first 16:9 widescreen

> TV, the 34-inch DT-3660 (\$5,000). Recoton showed the BullsEye amplified TV antenna (\$130), which is said to improve reception of signals 150 miles away.

> In the frenzied multimedia annex, amid nonstop videogame play and demonstrations of virtual-reality headsets, Digital Interactive Systems Corp. unveiled a prototype TV-top optical-disc player that can handle interactive CD-ROM discs as well as Photo CD's, Video CD's, and audio CD's, while Philips trumpeted its new \$299 CD-1 player.

> Now turn the page for a peek at some of the gems we uncovered. —Bob Ankosko

Showstøppers



Norris Communications' Flashback personal voice recorder (\$250) stores audio on a removable, reusable solidstate SoundClip. The two-button device offers standard play and record functions plus insert editing and variable playback speed. Rated bandwidth is 300 Hz to 4 kHz. The Flashback comes with two AAA batteries and a 30-minute SoundClip (\$70 separately). A 60-minute clip is due in November. The company is working on a solid-state CDquality audio recorder.



Born again: The top speaker from the revived Acoustic Research is the 25-inch-tall Model 303 (\$1,200 a pair), a three-way acousticsuspension system that remains true to AR's original goal of combining accuracy and value. Finish Is cherry veneer or black laminate (walmut prototype shown).





Out of this world? Fried's new MARS (McShane Ambience Recovery System) passive wiring scheme is used in the satellite sections shown atop the subwoofer columns of it's flagship four-piece Valhalla speaker system (\$5,490). To enhance realism, MARS cross feeds L – R and R – L ambience information between the dualvoice-coil satellite woofers. Total height is 49½ inches.

Packard Bell's forward-looking Spectria system is an Intel 486-based multimedia PC and home entertainment center in one. Standard features include a 16-bit sound card, speakers, a dual-speed CD-ROM drive, a fax modem, a 14-inch S-VGA monitor, and twenty-seven pre-installed software titles. Plug-in options Include a radic, a TV tuner, amd an answering system. Price: \$1,599 to \$2,599, depending on options.





Cerwin-Vega's groundpounding Stroker Series car subwoofers, available in 12-, 15-, and 18-inch sizes, all handle 1,000 watts of brute power and sport a patented dual-spider suspension system that can tolerate large excursions. Prices are \$750, \$800, and \$850, respectively, for the three sizes.



Elegant simplicity is the hallmark of Meridian's Model 562V A/V controller (top, \$1,395), featuring eight analog and five digital audio inputs and eight video inputs, and its Model 565 eight-channel Dolby Pro Logic-based surround processor (\$3,595).

> True story: Definitive Technology's Powerfield 1800 subwoofer (\$1,599), with an 18-inch woofer, a 500-watt amp, and an adjustable crossover, shook the Hilton hotel's concrete floor. Guess its 13-Hz rating is for real.





A true heavyweight: Thiel's 55-inch-tall CS7 speaker (\$8,000 a pair) deploys four metal-cone drivers, including a 3-inch midrange with a coaxially mounted tweeter, in a sloping baffle made of cast concrete (each speaker weighs 180 pounds). All the drivers use a new short-coil/long-gap design sald to greatly reduce distortion. Standard wood finishes are walnut and black.

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STEREO REVIEW'S CRITICS CHOOSE THE OUTSTANDING CURRENT RELEASES

Neil Young with Crazy Horse: Sophisticated Primitivism



eil Young's new album, "Sleeps with Angels," is one of the best he's ever made with his on-again, off-again collaborators in the band Crazy Horse. It is also one of the most unusual. In the past, Young has generally turned to the band when he wanted to blast full-bore, electric-guitar rock-and-roll, but for his softer, more reflective stuff he has more often worked with other musicians. Not so this time: there are acoustic instruments all over the place-folk guitars, rinky-tink planos that sound like what you hear in old Western movie saloons, flutes (!)-and it isn't until the sixth song, the 14-minute epic Change Your Mind, that anything like Young's signature electric squeal comes to the fore.

Sonically, "Sleeps with Angels" is something of a departure as well, recorded (I assume deliberately) so that it sounds as if the music's being picked up by one or two microphones at opposite ends of a long, empty room while the band jams unawares. I guarantee you haven't heard such unconventional instrumental balances (distantly miked drums, rhythm guitar way out front of the lead) since, oh, the last time you used that little local garage band playing live at the VFW hall.

That kind of studied primitivism disguises a canny sophistication, of course, and (predictably enough) what the album does have in common with Young and Crazy Horse's previous work is extremely interesting songs and a consistently vivid atmosphere. Here, for example, in meditations on urban decay like Driveby (as in shooting) and Safeway Cart, the guitars let you practically feel the miasma of heat and paranoia rising from the Los Angeles sidewalks. On the title song, which most will read as a farewell to Nirvana's Kurt Cobain, Young manages a tone of rueful regret that miraculously skirts the mawkish while the band makes delicate-yetgrinding industrial noises. And in Piece of Crap he revs up the tempo for a funny, angry, punk-style indictment of rampant consumerism. The rest of the album maintains an almost magisterial mid-tempo calm. If music can be both soothing

BESTOF MONTHOM

and abrasive, "Sleeps with Angels" is it. Ho hum. Another year, another brilliant Neil Young album. Steve Simels

NEIL YOUNG AND CRAZY HORSE **Sleeps with Angels**

My Heart; Prime of Life; Driveby; Sleeps with Angels; Change Your Mind; Blue Eden; Safeway Cart; Train of Love; Trans Am; Piece of Crap; A Dream That Can Last **REPRISE 45749 (64 min)**

Vivid Bartok from Hugh Wolff

s with Stravinsky's The Firebird, Bartok's complete score for The Miraculous Mandarin has been favored over the popular concert suite by several conductors lately, but the Mandarin suite (simply the first two-thirds of the ballet) can be quite effective in its own right. It is more than that in Hugh Wolff's vivid performance on a new all-Bartok Teldec CD. He makes you feel he had to conduct this music, not just to make a splash, but because he believes in it, cares about it, and understands it-and those refreshingly old-fashioned notions give the music's excitement and color vastly more impact than they could ever have in readings that settle for those qualities alone.

Throughout the well-filled disc, in fact,

Wolff: clarifying Bartok





Matthews: making folk (English) rock (Texas) connections

Wolff and the Philharmonia Orchestra seem to be responding with exceptional sympathy to each other and to Bartok. Their account of the elusive Deux Images, one of the most poetically evocative yet recorded, is probably the most treasurable part of this collection: luminous, uncontrived, stunning in the clarity of contrasts and relationships between the two pieces. Wolff allows the Hungarian flavor of the second, the Danse Villageoise, to come through uncoaxed, refusing to let it even hint at mere caricature.

The disc concludes with the Concerto for Orchestra. Wolff's exceptional understanding of the music's essential character is apparent here, too, together with a rare gift for engaging both the orchestra and the listener with the remarkable freshness still to be found in such familiar material without distorting the features that make it so familiar. While this recording does not displace the legendary Reiner/Chicago version on RCA Victor as my first choice, it is a surprisingly strong runnerup, and the outstanding appeal of the other two parts of Wolff's program may be enough to justify duplicating the concerto. By no means incidentally, the Teldec CD's sound is absolutely first-rate and well tailored to the requirements of the Richard Freed individual works.

BARTOK: **Miraculous Mandarin Suite; Deux** Images; Concerto for Orchestra Philharmonia Orchestra, Wolff cond. TELDEC 76350 (76 min)

lain Matthews on The Dark Side

f you've never quite swallowed the idea that the tie between English folk and American roots music is sturdier than a telephone cable, Iain Matthews is the living proof that it is. A London expatriate and founding member of Fairport Convention in the Sixties and Matthews' Southern Comfort in the Seventies, the singer-songwriter turned record-company executive in the Eighties. But five years ago he moved to Austin. Texas, and just last year he released "Skeleton Keys," his first solo album in more than a decade.

Matthews's music nowadays is rather what you might expect-well-crafted, English-Texas folk-rock. But what you might not expect is how personal his new album, "The Dark Ride," is, from Tigers Will Survive (Part II, Darcy's Song), a ballad to a grown-up child from a longabsent father, to For Better or Worse, a harrowing song he wrote for his wife, a rape survivor. Along the way there are less intense offerings-about a couple that fell in love long ago at a Texas dance hall (Ballad of Gruene Hall), and about the unspoken bonds between married couples (Rooted to the Spot). But whether Matthews is exploring an acoustic story-

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song ballad or dishing up a lively blues shuffle, he never takes a song for granted. Instead, he stokes it with lots of little charms and delights, from the harmony vocals of Sara Hickman and Kris McKay (Morning Glory and Breath of Life) to a lyric about driving and driving "until there was no center stripe" (I Drove).

Sometimes, Matthews's images and lyrics are as confusing as they are illuminating—ex-colleague Richard Thompson he's not—but his fetching tenor rarely fails to evoke an emotional response. To say that he also has a large capacity for melancholy is to warn you in advance, but go ahead and listen anyway—wellplaced catharsis can sometimes be a blessing. Alanna Nash

IAIN MATTHEWS The Dark Ride

I Drove; Girl with the Clouds in Her Eyes; Ballad of Gruene Hall; Tigers Will Survive (Part II, Darcy's Song); The Breath of Life; Save Her Love; For Better or Worse; Davey's Stung; Morning Glory; In London; This Is It; Rooted to the Spot; The Dark Ride WATERMELON 1025 (46 min)

Mahler's "Das Lied" From Solti and Co.

eorg Solti's new live recording of Mahler's Das Lied von der Erde (The Song of the Earth) with Amsterdam's Royal Concertgebouw Orchestra is a long way interpretively from his 1972 recording with the Chicago Symphony, which only skimmed the surface. Thanks to the responsiveness of the Dutch orchestra, steeped in the Mahler tradition, and the secure vocal skills of mezzo-soprano Marjana Lipovsek and tenor Thomas Moser, Solti penetrates to the very heart of Mahler's next-to-last completed masterpiece in all its bitterness, desolation, and final transcendence. The spacious yet warm acoustic of the Concertgebouw hall only enhances the listening experience.

It gave me not just pleasure but goosebump thrills right at the start to hear Moser negotiate the heroically demanding *Das Trinklied vom Jammer der Erde* (*Drinking Song of Earthly Woe*). The anger and bitterness of the words can almost be tasted in his plangent rendition of "But thou. O man, how long wilt thou live? / Not one hundred years may'st thou enjoy thyself with all the rotting trifles of this earth!"

In the opening measures of Der Einsame im Herbst (Autumn Loneliness), Lipovsek's vibrato-free delivery conveys a truly palpable sense of desolation. Not since the early recordings with Kerstin Thorborg and Kathleen Ferrier, both conducted by Bruno Walter, who presided over Das Lied's world première, have 1 heard vocal coloration used so tellingly in this music. Tenor and orchestra interweave an exquisite tonal tracery in the comparatively lighthearted Von der Jugend (Of Youth). In Von der Schönheit (Of *Beauty*), its larger-scale counterpart for female voice, Liposek movingly communicates both the idyllic aspects of the music and the hustle and bustle of the central episode with its "patter song" set in a cruelly low range. I have never heard Von der Schönheit sung better.

The bitterness of the opening song, now pitched at a level near delerium, returns in Der Trunkene im Frühling (The Drunkard in Springtime), which Moser hurls forth magnificently. As for the nearly half-hour-long Abschied (Farewell) that concludes the work, no words of mine can adequately convey its heartrending pathos. Marjana Lipovsek's performance, in perfect oneness with the Royal Concertgebouw under Solti's direction, says it all. There are currently almost two dozen recordings of Das Lied von der Erde on compact disc. I would unhesitatingly rank this one among the top versions. David Hall

MAHLER:

Das Lied von der Erde Lipovsek, Moser; Royal Concertgebouw, Solti cond. LONDON 440 314 (63 min)

Solti: getting to the heart of Mahler



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POPULAR MUSIC

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

DAVID BYRNE LUAKA BOP/WARNER BROS. 45558 (51 min) Performance: Dyspeptic Recording: Very good

With the resigned countenance of some-one surveying the smoldering ruins of what used to be, David Byrne finds modern life sadly out of whack on his new album. "David Byrne" is thematically of a piece with the Talking Heads' "Naked" and Byrne's prior tract on civilization's undoing, "Uh-Oh!" But the latest album, co-produced by long-time New York avant-noise master and bossa-nova specialist Arto Lindsay, is more stark and jarring than either of those other discs.

Byrne's outlook is bleak, tending toward disgust, confusion, and fright. He looks back at good times and discotheque days as if pondering a dimming phantasm: "What do you suppose? / Was it nothing it all?" he sings in Nothing at All. Sickness, dying, and death are everywhere. Instead of providing ironic leavening in the form of bright, bouncy music. Byrne and company play in chiaroscuro this time. Angels, a polyrhythmic stomp driven by Byrne's clarion guitar, does bear an outward similarity to the Heads' classic Once in a Lifetime. but by contrast here he's sending out such alienated distress signals as, "I can barely touch my own self / How could I touch someone else?" Occasionally the album runs aground on its own self-conscious eclecticism, but overall "David Byrne" is a brave and serious work in which the artist refuses to ignore the horror surrounding him. As he sang in another song from what seems like a lifetime ago, "This ain't no foolin' around." PP

J.J. CALE **Closer to You** VIRGIN 39601 (42 min) Performance: Haphazard **Recording: Same**

Once considered a mystical blues guru, the eternally laid-back J.J. Cale has turned out some classics in his time (Cocaine, After Midnight, Crazy Mama, Call Me the Breeze), his smoky voice and undulating guitar style often proving more seductive than his compositional talent. This album, recorded virtually in his living room, qualifies for an award-the Poorest Excuse for a Professional Recording Released This Year. "Closer to You" sounds like a teen band's first attempt at putting something down on tape, without anybody controlling the levels or knowing how to

mix. On Borrowed Time you can hear Cale say, "Somebody play something." In the publicity notes he explains, "The funny thing is, when I said that, like, 'take it,' nobody took it so I overdubbed it." Funny? More like pathetic. AN



PAULA COLE Harbinger IMAGO 21018 (42 min) Performance: Ambitious **Recording: Excellent**

wenty-six-year-old Paula Cole makes an impressive debut with "Harbinger," a collection of confessions and social observations in the alternative jazz-pop mode. As for her writing style, imagine Sixties singersongwriters Joni Mitchell and Laura Nyro poring over the diaries of their youth. And as a vocalist, add the feather-soft treble and trumpet headtones of, say, Julia Fordham.

Trained in jazz singing at Boston's prestigious Berklee School of Music, Cole is a compelling performer who pulls out all the stops orchestrating her urgent lyrics about

David Byrne: life during wartime?



coming of age (her own, in the claustrophobic, fictional town of Bethlehem), profound sensuality (Oh. John), global prejudice (Hitler's Brothers), and emotional starvation (Happy Home). With the help of producer Kevin Killen (Peter Gabriel, Elvis Costello, Kate Bush), Cole also excels at building layers of swirling sound to deftly create a sophisticated and changeable mood. She wisely eschews the traditional verse-chorus-bridge construction for a more free-form style that lets her explore a wide range of expression.

But while she keeps her focus for most of the first half of the program, she splinters in the second, degenerating into overly indulgent and precious melodic forays that often bore if they don't lose the listener altogether. That said, Cole shimmers so brilliantly at times that it's easy to forgive her excess exuberance. Think of her as a major talent in transition-learning how far "personal" can go before it becomes "prosaic." If she gets that under control, Cole may mature into one of her generation's premier voices. A.N.



THE FIRESIGN THEATRE **25th Anniversary Reunion Show: Back from the Shadows** MOBILE FIDELITY 747 (two CD's, 98 min) Performance: Amusing flashback Recording: Generally good

or baby-boomers—American ones, at least—the Firesign Theatre was the Beatles of comedy, a four-man troupe of writer/actors who for a decade or so (1966-1976) made a string of increasingly sophisticated albums that were both extremely funny and remarkably prescient about life as we would soon know it (they lampooned New Age mysticism and the implications of cable-TV narrowcasting. for example, years before such things impinged on the mass consciousness). Recently, Mobile Fidelity reissued a bunch of their albums on CD and

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POPULAR MUSIC

Sony put out a two-disc greatest-hits set, so last winter-feeling that the Nineties might be more in sync with their world view than the Reagan years-the original Firesigns mounted a ten-city reunion tour that's documented on this new album. Many of their most familiar bits are reprised and updated here, albeit in abbreviated form, and while you probably need a video to really appreciate what's going on (trust me on this-I saw the show when it played Manhattan), there's a loose-limbed improvisational feel to the proceedings that should be endearing to anybody who ever cared about the quartet's work. In the meantime, let's hope there's a full-length studio album ASAP-it would be good to hear what these guys think about the Brave New World they predicted all those years ago. 2.2



BOB MOULD Poison Years VIRGIN 39587 (73 min) Performance: One revelatory cut Recording: Excellent

etween his early-Eighties stint with Blüsker Dü, in which he more or less invented the whole alternative/indie scene, and his more recent and commercially successful incarnation as frontman for Sugar, Bob Mould made two solo records-"Workbook" and "Black Sheets of Rain"that died on the vine despite containing a lot of his characteristically abrasive and mournful rock-and-roll. This new disc collects songs from both of those still-available albums, but before you cry "rip-off," be aware that there's one new track that justifies getting "Poison Years" all on its own. It takes a very brave man to cover Richard Thompson's "Shoot Out the Lights," but Mould's live version here actually takes the epic original into a whole new dimension of guitar noise and emotional turmoil. It's a stunning performance, and it also makes you think that Mould should do an entire album of covers someday, sort of a postpunk version of David Bowie's "Pin Ups." 2.2 Are you listening, Bob?

STEVIE NICKS Street Angel MODERN 92246 (58 min) Performance: Great pouty cover photo Recording: Good

Does Stevie Nicks still have what it takes? The voice is less raspy, less strident, but still pretty. And her songs have forsaken the once endless mystical allusions that critics grumbled about for years.

But they still read like something written during a hallucinogenic high-words and images that might have seemed important and possibly profound while she was up, but otherwise come off as obscure and oblique, such as in Greta, which may or may not be about Garbo: "She says in words unspoken . . . she's from out of town / Well some cry . . . well I really don't dance down / Stormy weather . . . It cuts like a knife." Is this what happens when you quit the rock-and-roll life for mommyhood? Either way, we're left with pleasant melodies, churning guitars, and yet another question: Does Stevie have anything left to say? Maybe if she joined a band AN

DAN PENN Do Right Man

SIRE 45519 (37 min) Performance: Cry like a river Recording: Good

Dan Penn is a middle-aged white guy who, as a teenager, fell in love with black music. Don't know him? How about his songs—Sixties soul classics like Do

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JIM HENSON'S BLAKE
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Children. Juliana Hatfield finally goes all the way with Kermit the Frog.

BEATLES REUNION

Concert. Time approximate after baseball.

Right Woman, Dark End of the Street, Sweet Inspiration, It Tears Me Up. You Left the Water Running, and I'm Your Puppet, recorded by the likes of Aretha Franklin, James Carr, the Sweet Inspirations, Percy Sledge, Solomon Burke, Otis Redding, and James and Bobby Purify?

"Do Right Man" reunites Penn, once a staple of Chips Moman's Memphis-based American Sound Studios, with guitarist Reggie Young and keyboardist Bobby Emmons (the centerposts of Moman's house band) and with many of the players who put Muscle Shoals (where Penn started out) on the map. Most of them went on to make Nashville the hippest recording center without a coast. Here, Penn mostly just serves up his old tunes pretty much the way he wrote them and the way he demoed them for the singers who made them famous. He's not an extraordinary vocalist, but through clarity and simplicity of approach he makes a direct hit on the emotionsthere's nothing between the song, the singer, and the listener except the kind of honesty that rips a hole in your soul. AN

Saturday

 INSIDE AXL ROSE'S MEDICINE CABINET TORI AMOS 'N' ANDY Special. Former Police guitarist Andy Summers joins Tori for an evening of semiclassical instrumentals

and feminine-hygiene tips.

Musical. Blue Suede Shoes of the Fisherman (1965). A carnival roustabout (Elvis Presley) is mistaken for the Pope.

PP PAVAROTTI AND FRIENDS

Wrestling. Luciano Pavarotti goes two out of three falls with Placido Domingo, Gloria Estefan, and Sir Mix-a-Lot.

PERFORMANCES

Concert. Vanilla Ice, Mötley Crüe, Billy Ray Cyrus, Blind Melon, Barney, and the Arsenio Hall house band celebrate the songs of Paul Williams. ()) THE NEW THREE'S COMPANY

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WEBB PIERCE King of the Honky-Tonk COUNTRY MUSIC FOUNDATION 0019D/MSD-35500 (44 min) Performance: Definitive Recording: Good for the period

By the time he died in 1990. Webb Pierce was a Nashville embarrassment—a throwback to the days of rhinestone and rotgut excess. Now half the New Young Bucks want to be just like him. And why not? Pierce may have been garish enough to upholster a convertible with silver dollars and to charge admission to his guitarshaped swimming pool, but between 1952 and 1959-when these songs were recorded, unfettered with any instrument that might take the scummy edge off barroom music-he clearly gauged the public's taste and inherited the Hank Williams crown. When Pierce, in all his glorious nasality. plaintively moans Back Street Affair, There Stands the Glass, and In the Jailhouse Now, you know that's country. A.N.



THE ROLLING STONES Voodoo Lounge VIRGIN 39782 (62 min) Performance: More like doodoo Recording: Excellent

to be blunt about it, other than money 1 can't figure out why the Stones bothered to make this album, which showcases the worst aspects of Jagger's and Richards's solo records (hollow professionalism, rote rhythms) with none of their virtues (melodic invention, substantive grooves). Oh, it all goes down smoothly enough-producer Don Was crafted a nice faux-live sound for the band, new bassist Darryl Jones is clearly simpatico, and the Richards/Wood guitar mesh remains inimitable. But while Jagger's phrasing is sharp as ever and his harp work idiomatic perfection, the lack of memorable songs is almost shocking. This is some of the most impersonal, emptyheaded stuff the Stones have ever recorded, all pro forma horny-stud posturing (Love Is Strong, Sparks Will Fly) and stunningly cliched metaphors (Brand New Car, in which a woman is celebrated in seemingly endless automotive terms). One cut-New Faces-breaks through the torpor briefly, with a tinkling harpsichord that harks back to the band's Regency Dandy period, but it's not enough. In fact, "Voodoo Lounge" is the first Rolling Stones album I wouldn't care much if I never heard again. Sorry guys-as you observed some years ago, time waits for no one. S.S.

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Seal: moods for moderns?

SEAL ZTT/WARNER BROS. (51 min) Performance: Seamless Recording: Superb

ull of lush and lovely tunes that seem to glide on a frictionless plane, British singer Seal's second album is a wonderfully airy pop-soul symphonette. It's mood music that finds its soul in restless melodies that modulate in rolling, rounded contours. Producer Trevor Horn has done a masterful job of polishing "Seal" to a mirror-like gloss. Instruments are submerged into the mix like fine bits of glass pieced into a mosaic; guitars, percussion, keyboards, and voices are supple and subtle strands in Seal's weblike sonic architecture. The music breathes and pulses as songs flow seamlessly into one another. Certain tracks do have a more prominent signature, such as Prayer for the Dying with its hypnotic, tuneful throb and thrilling changes; Kiss from a Rose, which boasts some stunning a cappella passages from a chorus of overdubbed Seals; and Fast Changes, given a lithe coffeehousejazz feel courtesy of a lilting flute and a raga-style interlude. But the album's principal impact is as a totality, with one buttery passage melting dreamily into another. PP

JO-EL SONNIER Cajun Roots ROUNDER 6059 (41 min) Performance: Strictly French Recording: Good

n his various Nashville incarnations, Cajun singer/accordionist Jo-El Sonnier tried hard to be a mainstream artist, trotting out his Caiun roots on occasion but more often opting for spirited, R&B-flavored country-rock. But critics often lambasted him for forsaking his heritage (which he saluted so handsomely on "Cajun Life," a 1980 Rounder release), and Nashville finally gave Sonnier the boot in 1993. So now he's back where he started, singing authentic Cajun music. This new album, all in French, with old-world lyrics and most of the tunes that make up the Cajun canon, is the musical equivalent of blackened redfish-spicy, ethnic, and a hell of a lot better



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Big Noise from the Baltics



ere's a mysterious artifact that crossed our desks recently—a live CD recorded early this year at some smoky jazz dive

in Prague, Czechoslovakia, frequented by the noted Lou Reed fan Vaclav Havel. It features a sax player named (you guessed it) Bill Clinton. We dcn't know where you can buy "Two Presidents' Jam Session" (Cesky Rozhlas 0001-2531), unless you've got a Czech record store in your neighborhood, but be advised that it features our Commander in Chief in impromptu renditions of Gershwin's *Summertime* and Rodgers and Hart's *My Funny Valentine*. A so be advised that—on the evidence here—the Prez shouldn't give up his day job. *S.S.*

than you thought it would be. Even if you haven't a clue as to what Sonnier's singing, his vocals are passionate enough to keep you interested and guessing. Surprise yourself—buy this and like it. A.N.

SPIN DOCTORS Turn Me Upside Down EPIC 52907 (55 min) Performer: Funky blooey Recording: Good

What sets the Spin Doctors apart from their brethren on the neo-hippie alternative-band scene is that they've got a vocalist and songwriter whose presence doesn't allow them to slip into an endless jamming mode. (It also improves their chances of connecting with a broader public.) No other like-minded band would dare be so unabashedly heart-on-sleeve as to record a song called You Let Your Heart Go

The Subdudes: blinded by the light?

MICHAEL WILSON/WINDHAM HILL

Too Fast, nor make the tune so satisfyingly catchy and to the point.

But what gives Spin Doctors an edge could also prove to be a liability in the long run. Though they're all fine musiciansguitarist Eric Schenkman and bass player Mark White in particular-there's not much in the way of stick-to-your-ribs substance going on beneath the surface. Singer Chris Barron's capricious, stoned-cutup wordplay and the band's colorless, automatic funk quickly wear thin over the course of an album. And Barron doesn't quite deliver the goods vocally: a God-made funkateer he is not, and lines like, "Good lawd, ya'll / My gosh almighty / Her booty's fine" (from Big Fat Funky Booty), sound ludicrous issuing from his lips. To be fair, a degree of irony is an intended part of the Spin Doctors' aesthetic. Barron gets a lot of mileage out of such Far Side-style lyric scenarios as Cleopatra's Cat and Hungry Hamed's (an ode to an ethnic Brooklyn bakery), and when the band locks into a good groove behind him they can be a hoot. But although they play with taut, admirable economy throughout, the Spin Doctors too often wind up merely treading water, joking and funking reflexively, working hard but not really transcending. ΡP

THE SUBDUDES Annunciation HIGH STREET 10323 (55 min)

Performance: Revival Recording: Superb

• n their first album in three years, the Subdudes, a New Orleans-based R&B band, show they know something about annunciation firsthand. The "Annunciation," in Biblical terms, was the angel Gabriel's declaration that the Virgin Mary had conceived the Christ child. The Subdudes haven't delivered anything quite so headline-grabbing, but, in recording this record on the Crescent City's Annunciation Street, they've not only resurrected their career (their old label, Atlantic, dropped them in 1992) but also brought forth some Good News, indeed.

Stoked with gospel overtones, the Subdudes' repertoire at times sounds like that of a black Southern street band, and lead vocalist Tommy Malone sometimes comes across like Michael McDonald—a white guy trying too hard to sing the blues. But he quickly loses that pretense through pro-



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POPULAR MUSIC

found passion and his honest quest for spiritual answers to living life in a heathen world. From posing as the haunted lover in Why Can't I Forget About You to pounding out the Sixties soul of Poverty, in which he ponders what the world would be like without oppression and hardship, Malone plumbs the deepest depths of spiritual searching, finding comfort in the quest. And the playing here is uniformly fine, with affecting slide-guitar work, memorable harmonica solos from guest Howard Levy, and the astonishing tambourine work of Steve Amedee. "It's so hard, living on the human world I want to believe / But it's so hard," Malone sings of trying to regain the religious faith that sustained him as a boy. Maybe so, but this record, fresh and invigorating in both its music and enlightening lyrics, proves its own redemption for the listener. AN

TOAD THE WET SPROCKET Dulcinea

COLUMBIA 57744 (47 min) Performance: Solid Recording: Good

f one wanted to be uncharitable about it. Toad the Wet Sprocket could be branded as a kind of R.E.M. Lite, a more listenerfriendly version of those alternative pioneers, without the brainy angst. In their first two albums, Toad the Wet Sprocket was imitative of the Athenians to a fault. But in the band's third disc, "Fear," they made some giant strides forward, sharpening and clarifying a more distinct identity for themselves. Now, with "Dulcinea," they refine that progress, making for some altogether pleasant listening. None of Toad's vague, navel-gazing lyrics are about to stand the world on its head ("Another day I call and never speak / You would say nothing's changed"), but the even, well-tempered surface of their folk-rock jingle-jangle does have its aesthetic appeal. Their songs are hummable and easily absorbed, shot through with an arresting hook every now and again. Will Toad have a hit as big as their previous disc's All I Want? The two instant candidates for follow-up honors are Something's Always Wrong and Fall Down, in which clear-toned guitars and a wellhoned sense of folk-rock dynamics frame Glen Phillips's agreeably obscure vocals. "Dulcinea" is a perfectly delightful, if ultimately inconsequential, album with which to while away some time. PP



ART BLAKEY A Night in Tunisia MOBILE FIDELITY 601 (52 min) Performance: Superb Recording: Excellent

Much has been said about Art Blakey and his Jazz Messengers, a group whose personnel changed through the years and proved to be a launching pad for jazz stars. There were many great Messengers groups, but the best one was probably the

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1959-1960 edition heard on this reissue. With the crisp, pliant trumpet of Lee Morgan welded seamlessly to Wayne Shorter's sonorous, aggressive tenor, the result is, to put it mildly, uncanny perfection. Add the rhythm section, with Blakey's drums, Jaymie Merritt's bass, and Bobby Timmons's bubbly piano, and you have a startlingly cohesive group.

Listen to the title tune. Dizzy Gillespie's A Night in Tunisia, and you will literally be blown away. Blakey and his men frequently performed and recorded this bop classic, but rarely with such exuberance as herethis is a veritable orgy of sounds and invention, a masterpiece, right down to the obligatory codas by the two horns. The rest of the album is not to be sneezed at, either, but I recommend a slight rest period between the first cut and the remainder of the album. Technically, the original Blue Note recordings have never sounded as good as they do on this Mobile Fidelity "Ultradisc II" reissue, but I wish the company had also taken advantage of the CD's extended playing time and included other selections from these dates, even if it meant dropping the alternate take of Sleeping Dancer, Sleep On. Still, time has not diminished the excitement generated by these performances more than three decades ago. C.A.



RONNIE CUBER The Scene Is Clean MILESTONE 9218 (58 min) Performance: Muchos maracas Recording: Good

bout thirty-five years have passed since A baritone saxophonist Ronnie Cuber made his recording debut as a teenager with the Newport Youth Band. In the Sixtiesdeeply influenced by Pepper Adams-Cuber was active in two musical environments: he played jazz with Maynard Ferguson, George Benson, and Woody Herman, among others, and he stepped into the pop arena with such heavyweights as Aretha Franklin, Eric Clapton, King Curtis, and Billy Joel. He's long since found his own baritone style, but-as he demonstrates on this new album-he can also express himself on tenor, alto, and flute. The Latin beat that pervades "The Scene Is Clean" is expertly generated by percussionists Manolo Badrena and Milton Cardona, aided in no small measure by pianist Geoff Keezer. I don't find fault with any of this music, but the program is a bit monotonous: more diverse material could have made this a superb album. C.A.

SONGS FOR SWINGING TECHNO-WEENIES



ust what the world needs, we thought, upon hearing "Instruments of Change" by Jaron Lanier (Point 442-132)-yet another CD of New Age mood-mongering performed (according to the press release) on "a colorful array of instruments from around the globe including bowed psaltery, the khaen (an Asian mouth organ), and the Chinese gu zchung (a type of harp)." We won't comment on the music itself (okay, we will-it sounds like New Age moodmongering) but the composer/ performer has an interesting secret identity: By day he's a Silicon Valley computer scientist and a pioneer of Virtual Real-ty-in fact. he coined the term and co-invented the electronic gloves used in VR technology. Sheesh . . . and we thought all those hotshot computer dweebs played in punk bands. S.S.

MULGREW MILLER With Our Own Eyes NOVUS 63171 (60 min) Performance: Ach du lieber Recording: Fine

n the fourteen years since he emerged on the national scene with the Duke Ellington ghost orchestra. Mulgrew Miller has honed his style to a point where it is recognizable for all the right reasons. "With Our Own Eyes" is the latest in a fast-growing catalog of Miller recordings. a trio session that focuses on the pianist's own compositions but also includes the classic Body and Soul, Michel Legrand's Summer Me. Winter Me. and Another Type Thang, by fellow pianist James Williams. It's a typical Miller set-imaginative, lyrical, and apt to swing. There is also a measure of whimsy, such as Ach Du Lieber Augustine, which creeps into the end of Carousel, but what's most important is that something worth our attention is happening throughout. C.A.

ANDRÉ PREVIN A Touch of Elegance COLUMBIA/LEGACY 57637 (61 min) Performance: Excellent Recording: Very good

Although he became better known for his film scores and his work as a conductor in the classical field. André Previn first gained public attention as a jazz pianist. His most successful work as such was a 1956 Contemporary album of music from *My Fair Lady*, a collaboration with drummer Shelly Manne (the association produced many other fine releases and probably originated the idea of dressing Broadway in a jazz outfit).

The eighteen tracks in this new Previn compilation are taken from five Columbia albums he made between 1961 and 1963. Previn is an elegant player, and while he's never had a truly personal keyboard style, he has such exquisite taste that it almost doesn't matter. Here he performs standards, original songs, and songs by Duke Ellington and Kurt Weill in a variety of settings. often using his own arrangements for the string section. More adventurous ears will enjoy his work with trombonist J. J. Johnson, especially Bilbao Song, and Previn's original fans will recognize the old spirit on Don't Sing Along and Intersection, which reunited him with Shelly Manne. It is extraordinary that the most recent tracks here are thirty-one years old, because this music has the freshness of something that happened yesterday, and I happen to like it all. C.A.

> TOM TALBERT Bix Duke Fats SEA BREEZE 3013 (40 min) Performance: Frosty but delicious Recording: Very good

TOM TALBERT The Warm Café SEA BREEZE 2052 (59 min) Performance: Engaging creativity Recording: Excellent

f you are not familiar with Tom Talbert's name, don't feel bad-even though he became active on the music scene in the middle Forties, his work has never cast him into the brightest spotlight. The band he led on the West Coast between 1946 and 1949 at one time included Art Pepper and Jack Montrose, and one edition made four Paramount sides in 1947. But nothing much happened, so Talbert broke up the band and wrote charts for other leaders, including Cab Calloway, Claude Thornhill, Stan Kenton, Oscar Pettiford, and Tony Pastor. In 1956, Talbert signed with Atlantic, and the result was two albums, "Bix-Duke-Fats" and "Wednesday's Child." The former set was later reissued on a small California label, Modern Concepts, and is now available again on Sea Breeze, another small label, along with "The Warm Café," recorded in 1991 and 1992.

The three tributes were recorded in separate sessions, each with a slightly different group. The Waller date has a pianist, George Wallington; the rest of the tracks with one exception—do not. All three feature trumpeter Joe Wilder, bassist Oscar

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POPULAR MUSIC

Pettiford, and drummer Osie Johnson. The arrangements are written in a style that reflects the mid-Fifties' jazz trend, which was to make it all somewhat frosty. The sessions were made in New York, but Talbert's approach is very West Coast-we get burnished brass and bouncy rhythm with good, solid solos. Green Night and Orange Bright is Talbert's own composition, a slow, oozing, personal impression of Bix and Fats that has more of the feel of Woody Herman. George Wallington plays superbly on the Waller pieces, without a trace of Waller's own style-Black and Blue is particularly effective. Wilder, Herb Geller, Aaron Sachs, and Barry Galbraith contribute fine solos.

Except for Cole Porter's What Is This Thing Called Love, Django Reinhardt's Manoir de Mes Rêves, and Fats Waller's Ain't Misbehavin', "The Warm Café" features Talbert's own compositions, and the stars here are alto saxophonist Don Shelton and trumpeter Steve Huffsteter. The rest of the cast on this set does not include any household names, but they're all excellent musicians, and the focus is where it really ought to be, on Talbert's charts. Again 1 hear the echoes of Herman's Herd stampeding gently through Talbert's music. I loved the Herman Herd, and I rather fancy what I hear here. Tom Talbert has more music coming out on Sea Breeze-I hope it gets the wide distribution it merits. C.A.

Collection

CARNEGIE HALL SALUTES THE JAZZ MASTERS VERVE 523150 (76 min) Performance: Mixed Recording: Good remote

erve celebrated its fiftieth anniversary last April with a Carnegie Hall concert that featured a mix of artists almost as diversified as the label's roster. The result, as heard here, was an evening of very mixed quality. The opener, Tea for Two, features the sixteen-piece Carnegie Hall Jazz Band and a sextet whose all-star members include trombonist J.J. Johnson, who performed at the Jazz at the Philharmonic concert that started it all a half century ago. When the band kicks in so does Vanessa Williams, but her vocal is pitiful. Apropos weak spots, the next performance is a tribute to Oscar Peterson by seventeen-yearold Peter Delano; okay, the kid shows promise, but this was not the right occasion to display it.

Of the evening's vocalists, Dee Dee Bridgewater does a palatable job giving Ella Fitzgerald the nod with *Shiny Stockings*; Abbey Lincoln pays a fine tribute to Billie Holiday with *I Must Have That Man*; Antonio Carlos Jobim nurmurs his own *Desafinado* and *How Insensitive* as if to himself; and Betty Carter manages to get *How High* the Moon off the ground without going into deep space. Carter returns to engage in some expendable scatting at the end of the final track, *Now's the Time*, which does better in the instrumental department. In fact, its opening choruses—playful bass banter by Ray Brown and Christian McBride—are among the concert's highlights, and the interactions between J.J. Johnson and Jackie McLean, Herbie Hancock and Hank Jones, Roy Hargrove and Joe Henderson, and the Kennys Burrell and Washington later in the track are fine too.

From an artistic point of view, Hank Jones's solo rendition of Willow Weep for Me and a sextet performance of The Eternal Triangle-with Hargrove, McLean, and guitarist Pat Metheny-are the set's most satisfying tracks. Jimmy Smith's organ roaring Down by the Riverside is most apt to set your fingers snapping, and Yellowstone, featuring saxophonist Art Porter with Jeff Lorber and Bruce Hornsby on keyboards, is most likely to be heard at your local supermarket or at a Kenny G Appreciation Society meeting. Manteca is enlivened by Roy Hargrove's sparkling trumpet-it is a worthy tribute to Gillespie. Was this a worthy tribute to Verve? I suppose so, but it does point out how jazz has lost much of its freshness. We are on a treadmill, and some of these feet are getting more tired at each turn. C.A.

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POPULAR MUSIC



ADIOS AMIGO: A TRIBUTE TO ARTHUR ALEXANDER

RAZOR & TIE 2814 (54 min)

All-star—Graham Parker, Elvis Costello, Marshall Crenshaw—interpretations of songs by the R&B cult figure who died last year in the midst of a major career renaissance. High points: soul great Chuck Jackson and Mark Knopfler on You Better Move On, Roger McGuinn's chiming twelve-string on Anna, and Robert Plant's understated but moving If It's Really Got to Be This Way. S.S.

JOHN CALE Seducing Down the Door: A Collection 1970-1990

RHINO 71685 (two CD's, 154 min)

An excellent overview of Cale's work *après* the Velvet Underground, which is more substantial and stylistically varied than I remembered. Rhino's remastering is particularly noteworthy—for example, the songs from "Paris 1919" (for my money Cale's masterwork) seem to be missing about seventeen layers of gauzy sonic murk compared with the Warner Bros. reissue. S.S.

FRANK CHRISTIAN Where Were You Last Night

GAZELL 2009 (41 min)

Frank Christian, a singer/songwriter/guitarist with a strong jazz/blues bent who's versatile enough to have recorded with both the Smithereens and Nanci Griffith, made this album for a tiny Greenwich Village-based label in the early Eighties; consequently, few people have heard it, and that's a genuine shame. As this handsomely remastered CD version proves, it's got late-night, back-room ambience to burn, and the tile tune is a should-be classic that somebody (k.d. lang?) ought to cover, pronto. S.S.

GILBY CLARKE Pawnshop Guitars

VIRGIN 39567 (43 min)

Adequate but mostly unexciting heavymetal noise from the guy who replaced Izzy Stradlin in Guns 'n Roses. Things threaten to perk up when Clarke covers the Stones (*Dead Flowers*) and the Clash (*Jail Guitar Doors*), but the latter only proves that he's got good taste, and the former demonstrates that Axl Rose may be the cheesiest piano player in rock-androll history. *S.S.*

COUNT FIVE Psychotic Reunion Live!

PERFORMANCE 396 (53 min)

Count Five was the quintessential onehit wonder—the band's 1966 Yardbirds knockoff, *Psychotic Reaction*, was the only time anybody outside of their home town ever heard of them. This reunion show, however, recorded live in the late Eighties with all the original members, is a minor knockout. The guys sound exactly like they must have sounded as teenagers in their garage in San José, California. S.S.

ROGER DALTREY Daltrey Sings Townshend Live at Carnegie Hall

CONTINUUM 19402 (71 min) Given the existence of any number of live Who recordings of these songs (sans the overblown orchestral accompaniments here), the pertinent question is, "Why did he bother?" S.S.

EROTIC SOUND EFFECTS BAINBRIDGE 2009 (67 min)

The 147 sound effects on the 90 tracks here begin with some corry pick-up lines, include raunchy messages to put on your answering machine (when you're sure mother isn't going to call), and extend to moans, groans, and the sounds of "plain ol' sex on a squeaky bed." The actors sound amateurish, but they make up in enthusiasm whatever they lack in professional polish. *William Livingstone*



KRISTEN HALL Be Careful What You Wish For

HIGH STREET 94-11 (51 min) Acoustic singer-songwriter. Half-baked songs. Forgettable voice. Amateurish production. Just because somebody paid money to release it doesn't mean you have to buy it, no matter how guilty you feel about the world. A.N.



SCOTS PIRATES

SCHOOLKIDS 1508 (55 min) Led by justifiable Detroit legend Scott Morgan (his Sixties outfit, the Rationals, was an astonishing blend of the Rascals' blue-eyed soul and the metallic fury of the MC5), this band purveys atmospheric, nofrills, guitar rock that makes most of what passes for same these days sound puerile. As they used to say in Morgan's home town, it's killer. S.S.

PART THREE – EXTRA CREDIT

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CIRCLE NO. 33 ON READER SERVICE CARD

CLASSICAL MUSIC

NEW RECORDINGS PEVIEWED BY ROBERT ACKART, RICHARD FREED, DAVID HALL, GEORGE JELLINEK, ERIC SALZMAN, AND DAVID PATRICK STEARNS

BARBER: Songs

Studer: Hampson: Browning: Emerson String Quartet **DEUTSCHE GRAMMOPHON 435 867** (two CD's, 110 min) Performance: Excellent overall **Recording: Nice ond roomy**

Among the forty-seven songs in this complete collection, titled "Secrets of the Old" after a Yeats setting, are ten unpublished items recorded here for the first time. The earliest of the hitherto unknown works, A Slumber Song for the Madonna, written when the composer was fifteen. shows important aspects of his style already in place. Though his later music has heightened descriptive elements and greater emotional complexity, the maturity of his early work was clearly phenomenal. And considering that he came of age musically in the mid-1920's, his essentially Romantic musical language wasn't quite as retrogressive as it may have seemed later on.

He rarely used that language more sincerely than in his songs. Though his earliest published songs, the three in Op. 2, sound like self-conscious exercises in Anglophilia, the unpublished ones written at the same time, such as the 1936 Beggar's Song, are full of naturalness and humor. Heard in the context of this chronological anthology, the well-known Hermit Songs (1952-1953), first performed by Leontyne Price, are all the more moving because we can see him pulling together different creative strands to create something more expressive and technically interesting than he had ever done before. Similarly, Despite and Still, written for Dietrich Fischer-Dieskau in 1969, after the disastrous première of Barber's opera Antony and Cleopatra, has even greater impact given that context; the Robert Graves text seems like an emotional shell game full of surprising hidden meanings, tinged with bitterness but never cynicism.

Baritone Thomas Hampson's selections are a bit overdone, sometimes slighting the music's more soft-spoken qualities, but soprano Cheryl Studer's singing is bright and precise. Long-time Barber champion John

RUTH ANN SWENSON-POSITIVELY GOLDEN

he debut solo album by soprano Ruth Ann Swenson-who has appeared on such PBS telecasts as Richard Tucker Galas and Pavarotti Plus and sung on the world's great opera stages -arrived in late August, in time for the fall season. "Positively Golden," on EMI Classics, gives lovers of the bel canto repertory something to cheer about: a bravura array of showpiece arias for lyric coloratura voice worthy of Sills or Sutherland. The composers represented are Donizetti, Bellini, Gounod, and Meyerbeer, and Swenson is accompanied by the London Philharmonic under veteran conductor Nicola Rescigno.

Swenson grew up in suburban New York, where, in her words, she was "more into Manilow than Mozart and [into] being a jockette in tennis, softball, and volleyball." Her big break came when she replaced an ailing soprano as Despina in performances of Mozart's Cosi Fan Tutte at the San Francisco Opera. She now lives in San Francisco and will perform there this season in



Donizetti's Lucia di Lammermoor. She'll travel to Chicago for Stravinsky's The Rake's Progress, to New York for Donizetti's L'Elisir d'Amore at the Met, and to Japan, Switzerland, Israel, and around the U.S. for other operatic and concert appearances. Not much time for tennis these days!

Browning, whose piano playing has rarely been more articulate or authoritative, accompanies the soloists in everything but Dover Beach, where Hampson is joined by the Emerson String Quartet. Browning also deserves credit for shepherding the whole project to completion and for researching and writing the comprehensive notes. D.P.S.

BEETHOVEN: Piano Quartet, Op. 16 SCHUMANN: Piano Quartet, Op. 47

Ax: Stern; Laredo: Ma SONY 53339 (53 min) Performonce: Warmhearted **Recording: Rich**

the affection shared by Isaac Stern and his three younger associates-Emanuel Ax (piano), Jaime Laredo (viola), and Yo-Yo Ma (cello)-for the smallish but distinguished repertory of Classical and Romantic works for piano quartet, and the enthusiasm generated by their collaboration, illumine this Beethoven/Schumann presentation perhaps even more strikingly than their earlier Brahms and Fauré recordings. Beethoven's Op. 16 is far less frequently heard in this version than in his original one for piano and wind quarter; while the latter remains the "basic" version, the one with strings sounds hardly less idiomatic to these instruments in this warmhearted realization.

Among recent recordings of the Schumann, one of the genuine masterworks of the genre, my preference is for the one on RCA by André Previn (as pianist) and his group of string players-their essentially similar approach benefits from a touch more drive. But those attracted by the Beethoven coupling will find only pleasure in this richly recorded Sony CD, which comes with annotation by Ax that is as characteristically lucid and stimulating as RFhis playing.

BRAHMS: Viola Sonatas, Op. 120; Songs for Alto, Viola, and Piano, Op. 91

Zukerman: Neikrug: Horne: Katz RCA 61276 (57 min) **Performonce: Sonatas lovely**

Recording: Very good

grew up with the original clarinet versions of Brahms's Op. 120 sonatas (No. 1, in F Minor, and No. 2, in E-flat Major), so I am more than usually aware of the change in character wrought by the composer in transcribing these masterpieces for viola, especially given the dark and dusky tone quality with which Pinchas Zukerman imbues them in these performances with pianist Marc Neikrug. The opening of No. 1 is somber and deliberate, and there's no

lack of sentiment in the slow movement. While the *Allegretto grazioso* has delicacy, I'd have liked a bit more lilt. Passion and a swift flow mark the finale. In No. 2, the first movement, marked *amabile*, is gentle to a fault. There is more of a legato style to the middle movement than I'm used to and more sweetness than ruggedness in the marvelous quasi-chorale middle section. I like the easy agility that Zukerman and Neikrug bring to the penultimate set of variations. Fine, rich recorded sound in both sonatas.

The two Op. 91 songs for contralto, viola, and piano-performed here by Marilyn Horne with Zukerman and the singer's ever-dependable accompanist. Martin Katz-are among Brahms's loveliest and most cannily woven creations. Gestillte Sehnsucht, on a text by Friedrich Rückert, is by turns calm and agitated, with an independent viola line. In the more celebrated Geistliches Wiegenlied, the viola interweaves the melody of the carol Joseph. Lieber Joseph Mein with the vocal line, a setting of a poem by Lope de Vega (in a German translation). Regrettably. Horne is rather off-form in these performances, tending to swallow her words in the Rückert song and to let the line get a bit out of focus. Geistliches Wiegenlied fares somewhat better. In any case, Zukerman and Katz are admirable partners. D.H.



BRUCKNER: Symphony No. 6 BACH/WEBERN: Ricercore Cleveland Orchestra, Dohnanyi LONDON 436 153 (63 min) Performance: Squeaky clean Recording: Very good

Bruckner's Sixth Symphony, in A Major. is the most compact and textually uncontroversial of his nine symphonies, and if it does not scale the empyrean heights of the last three, it certainly makes for enjoyable and absorbing listening.

Christoph von Dohnanyi at first soft pedals the insistent nervous figure that propels the opening movement, but he lets it have its head when the major thematic material enters. Dramatic contrast dominates the dynamic picture. The slow movement, with its haunting sigh for solo oboe, makes its full effect thanks to the Cleveland strings. The march-like main body of the scherzo curiously pre-echoes the opening bars of the Mahler Sixth, and the Cleveland horns do themselves proud with the fanfare figure in the bucolic middle section. Dohnanyi really brings out the finale's restless, stormy quality, which makes the blaze of glory at the end that much more effective.

London offers a substantial filler in the form of Anton Webern's fascinating and illuminating *Klangfarbenmelodie* (tone-color nelody) orchestration of the great six-part ricercare from Bach's *A Musical Offering*. This kind of music is right up Dohnanyi's alley, and I can hardly imagine a better and cleaner realization. And while Severance Hall has never been my favorite recording locale, it seems just right for these two works. *D.H.*

DEBUSSY: La Mer CHAUSSON: Poème de l'Amour et de la Mer

RAVEL: Une Barque sur l'Océan Meier: Philadelphia Orchestra, Muti EMI 55120 (63 min)

Performance: Large-scale Recording: Sumptuous

A fter years of unimaginatively programmed, routinely performed recordings with the Philadelphia Orchestra. Riccardo Muti wrapped up his tenure there with this inspired collection of French works depicting the sea, all written around the turn of the century. The differences between the composers are heightened by the similarity in subject matter—Ravel's tight thematic development versus Debussy's open forms, or the explicit tone painting both engage in versus Chausson's more abstract, Wagnerian vocal lines.

Muti's interpretations are far from having an idiomatic French lightness. He seems to have come to this music by way of the opulent heaviness of Scriabin's symphonies, which he recorded so successfully some years ago. But with that heaviness comes a grandness of gesture that I found invigorating. The mezzo-soprano Waltraud Meier, a fascinatingly volatile singer, performs the Chausson with little heed to surface beauty; she seems more interested in probing the text and in conveying a sense of dramatic spontaneity. D.P.S.

KOECHLIN: The Jungle Book

Berlin Radio Orchestra. Zinman RCA VICTOR 61955 (two CD's, 91 min)

Performance: A bit rough Recording: Okay

Charles Koechlin is remembered, insofar as he is remembered at all, as that French composer who was fascinated by Kipling's Jungle Book. Beginning at the turn of the century with vocal settings of three of Kipling's poems and continuing in the 1920's and 1930's with four substantial symphonic poems, Koechlin hitched his star to a once-adored poet who has gone even further out of fashion than Koechlin himself. Every once in a while, someone comes up with the idea of reviving, if not Kipling, then at least Koechlin. This current attempt is perhaps the most credible of all, if only because conductor David Zinman gives us, for the first time on records, the whole Kipling cycle in all its diversity and colorful sincerity.

DISCOVER MUSIC FOR LESS

new budget-price CD label, the Belgium-based Discover International, was to be launched in the U.S. in September with over seventy releases distributed by the PPI Entertainment Group. Aimed at the back-toschool crowd and all bargain-hunting music lovers, Discover CD's offer a wide variety of music, ranging from symphonies by Dvorak and operas by Puccini to piano music by Mozart and tangos by Astor Piazzolla. The roster of artists includes planists Aldo Ciccolini and Lazar Berman, violinist Pavel Eerman (Lazar's son), soprano Miriam Gauci, and conductors Yehudi Menuhin and Alexander Rahbari, who is principal conductor of the Belgian **Radio and Television Philharmonic** and also Discover International's music director



The last and best-known of these pieces, Les Bandar-log, a bit of a satiric scherzo (the banderlogs are monkeys), is not the most typical. Most of these curious and original works suggest a kind of nature mysticism that ought to appeal to a modern environmental consciousness. Koechlin's musical voice is not quite consistent, and sometimes he wanders down the oddest bypaths. He speaks in a twentieth-century European language about curiously old-fashioned and exotic things. There is nothing specifically Indian about his jungle; it's not exactly a real place but more like a landscape of the imagination.

I wish I liked these performances better. The tyrical sections work well—listen to "Night" from *The Spring Running* or to *The Meditation of Purun Bhagat*. At such moments one can really believe in Koechlin. But the livelier and more dramatic sections are a bit rough, and the performances overall are merely workmanlike. Still, even with their shortcomings, they help open up the exotic and private imagination of one of the strangest and most neglected figures in twentieth-century music. *E.S.*







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CIRCLE NO. 16 ON READER SERVICE CARD

CLASSICAL MUSIC

MUSSORGSKY: Boris Godunov

Soloists: Chorus; Berlin Philharmonic, Abbado SONY 58977 (three CD's, 201 min)

Performance: Outstanding Recording: Orchestra highlighted

lthough this is a lavishly cast Boris, with no weak elements among the singers, the real stars are Claudio Abbado and the Berlin Philharmonic. That conjunction may bring Karajan to mind, as well as the memory of his own Boris, which, however, he recorded with the Vienna Philharmonic (on London). But there are other major differences between that performance and this new one. Karajan favored the Rimsky-Korsakov edition, whereas Abbado opts for Mussorgsky's original-the 1872 edition with the St. Basil Scene added along with the Kromy Forest finale (minus the Simpleton-Urchins episode). Abbado's way with the music is more urgently propulsive, avoiding Karajan's expansions and lingerings while at the same time equaling the



virtuosity of execution he was able to elicit from his players. The engineering keeps the remarkable Berlin orchestra in the foreground throughout, though it frequently overshadows the principals and, particularly in the early scenes, accords insufficient presence to the chorus as well.

Anatoly Lotcherga does not portray the title character in the exuberantly theatrical manner of Feodor Chaliapin or Boris Christoff (the most famous exponents of the role). His Boris is even more subdued than the figure that such relatively restrained interpreters as Nicolai Ghiaurov and Martti Talvela have made him: an inwardly guiltridden, melancholy ruler and a tender father whose ferocious streak is rarely in evidence. What Kotcherga brings to his portrayal is an impressive and unfailingly musical command of a warm, powerful, yet firmly focused bass-baritone that ranges effortlessly over its full extension.

In the other main roles, Sergei Larin makes a lyrical yet convincing Dimitri, on a par with the best on record: Samuel Ramey is *bel canto*-trained yet remarkably Russian-sounding as Pimen; Marjana Lipovsek is a rich-toned and vivid Marina; and Sergei Leiferkus is a steely, sinister Rangoni. Philip Langridge (Shuisky). Elena Zaremba (Hostess), Gleb Nikolsky (Varlaam), Albert Shagidullin (Schelkalov), and Alexander Fedin (Simpleton) all turn in excellent cameos, and Abbado molds the cast into a remarkable ensemble. In sum, this *Boris* is an

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outstanding achievement musically, if not ideally balanced sonically. *G.J.*

NYMAN: The Piano Concerto; MGV (Musique à Grande Vitesse)

Stott; Royal Liverpool Philharmonic Orchestra; Michael Nyman Band and Orchestra ARGO 443 382 (59 min)

Performance: Bracing Recording: Somewhat flat

Michael Nyman has never claimed to be a profound composer, and it's to his credit that he hasn't acquired any pretensions because of the success of his score for the movie *The Piano*. The concerto drawn from it is somewhat like Korngold's Violin Concerto, which recycles that composer's movie themes. In both cases, superficially ingratiating qualities compensate for the lack of symphonic argument.

Rooted in minimalism, Nyman isn't concerned much with traditional forms, and his "concerto" has little of the usual tension between soloist and orchestra. Formally, it's more like a suite than anything else. Mosaic-like modules of music—often with moderately engaging textures and surprising instrumental sonorities—are strung together in a complementary way, many times with little transition between them.

But even if you expect no more than that, the music's lack of emotional range makes it seem more relentless than the movie's soundtrack album. Nyman fans will want both, though the filler on this disc, a piece titled *MGV (Musique à Grande Vitesse)* written for the inauguration of a new highspeed European train, isn't an attractive bonus. Like Honegger's *Pacific 231*, it celebrates the intoxicating energy, force, and regularity of a railroad, but it's so emotionally and stylistically constricted it would benefit from being half as long. *D.P.S.*

RACHMANINOFF: Variations on a Theme of Chopin; Piano Sonata No. 1

Boris Berezovsky TELDEC 90890 (66 min) Performance: Excellent Recording: Richly beautiful

Among Sergei Rachmaninoff's largescale works for piano solo, the ones usually performed and recorded are the *Second* Sonata, composed in 1913, and the Variations on a Theme by *Corelli*, the first

Pianist Boris Berezovsky



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The Sensible Sound Issue #47

CIRCLE NO. 19 ON READER SERVICE CARD

CLASSICAL MUSIC

of the handful of masterworks produced in his final dozen years. Young Boris Berezovsky, winner of the gold medal in the Tchaikovsky Competition in Moscow four years ago, has had the imaginativeness to direct his attention instead to Rachmaninoff's seldom-heard earlier works in both forms, and he does them both proud.

The Op. 22 Chopin Variations (on the Prelude in C Minor, Op. 28, No. 20) preceded the Corelli Variations by nearly three full decades; this was, in fact, Rachmaninoff's first big work for piano solo, and perhaps that is why he left various options for the performer. Berezovsky omits Nos. 12 and 14 of the twenty-two variations and chooses the less demonstrative of the two endings, arriving at what strikes me as ideal proportions for a work whose strengths he marshals with a seemingly instinctive understanding and commitment.

The three movements of the D Minor Sonata are "characteristic portraits" of Faust, Gretchen, and Mephistopheles—in other words, a pianistic counterpart to Liszt's *Faust Symphony*. In these extended fantasies, however, Rachmaninoff's obsession with the *Dies Irae* theme makes itself



felt more than any literary allusion, putting what was for him the most personal stamp on the music.

Berezovsky puts his own personal stamp on both works, without at any point suggesting they are mere "vehicles" for him. Teldec has come through with a sonic frame that makes the most of the broad spectrum of colors and textures without the slightest hint of harshness or a single note that is less than richly beautiful. *R.F.*



RAVEL: Boléro; Ma Mére l'Oye; Une Barque sur l'Océan; Alborada del Gracioso; Rapsodie Espagnole Berlin Philharmonic. Boulez DEUTSCHE GRAMMOPHON 439 859 (76 min) Performance: Polished Recording: Translucent

For Pierre Boulez's disc debut with the Berlin Philharmonic, this generously filled CD of Ravel staples was recorded in Berlin's Jesus-Kristus Kirche. The complete Ma Mère l'Oye (Mother Goose) ballet is the prize item. The well-known fivemovement suite is magical enough, but the full ballet with its eerily dramatic overture, additional spinning-wheel episode, and marvelous connecting interludes is an even more luscious listening experience. Boulez may have a reputation as a cool, unemotional conductor, but he surely weaves a spell in this performance. The unearthly curtain of sound that leads into the "Pavane of the Sleeping Beauty" is the most memorable moment.

Une Barque sur l'Océan, also superbly performed, may remind you fleetingly of Debussy's La Mer, but it actually has more in common with the seascapes of Rimsky-Korsakov's Scheherezade. With the remaining three works, we are on thrice-familiar territory. Alborada de Gracioso has less razzle-dazzle here than I am used to, but the texture and rhythms are precisely etched and the recitative episodes vividly characterized. There is atmosphere aplenty in the first three sections of Rapsodie Espagnole, and in the finale Boulez maintains a deliberate tempo, presumably in the interest of rhythmic articulation. His tempo for Boléro is a compromise-not as slow as the composer's own recording, but not as fast as most performances I've heard. The Berlin winds and brass acquit themselves splendidly, both solo and blended, and the climax has all the power one could ask. The sound throughout is resplendent. D.H.

CLASSICAL MUSIC

RUBINSTEIN: Symphonies No. 3 and No. 5 ("Russian") Slovak State Philharmonic, Kolman CENTAUR 2185 (78 min) Performance: Idiomatic Recording: Smooth

The current year marks the centenary of the death of Anton Rubinstein, remembered both as a composer and as a pianist of towering ability whom Liszt himself acknowledged as a worthy rival. Rubinstein's large-scale symphonies enjoyed great popularity in the last century, and No. 5, the socalled "Russian." is one of the most fetching, filled with fine tunes, appealing colors, and infectious rhythmic vitality. In his annotation as well as his performance, the American conductor Barry H. Kolman conveys real enthusiasm for the work.

The Third Symphony appears here in the way of a discovery, as it had apparently been unheard since Rubinstein's death. It was Kolman who recently found the long-lost score, and Shana Ailwine put in hundreds of hours preparing orchestral parts. Somewhat less distinctive than No. 5, it is handsomely presented and makes an in-triguing companion piece. R.F.

SCHOENFIELD: Four Parables; Vaudeville; Klezmer Rondos Soloists: New World Symphony. Nelson ARGO 440 212 (72 min) Performance: Cooking

Recording: Neat

Paul Schoenfield, practicing the ancient and honorable profession of pastry cook, whips up some very tasty pastiches. The history of popular music is evoked here in classical form: klezmers and ragtimes, vaudeville, jazz and blues. Scott Joplin, George Gershwin, and Leonard Bernstein, all in bright symphonic dress. Four Parables is a kind of piano concerto (played by Jeffrey Kahane), Vaudeville features the curious small piccolo trumpet (played by Wolfgang Basch), and Klezmer Rondos is a kind of flute concerto (expertly played by Carol Wincenc). The music is endlessly. brashly smart, the soloists cook with gas. and the New World Symphony under John Nelson is full of beans. ES

SCHUBERT: Polonaise in B-flat Major; Rondo in A Major; Konzertstück in D Major; German Dances and Minuets

Kremer: Chamber Orchestra of Europe DEUTSCHE GRAMMOPHON 437 535 (71 min) Performance: Delectable

Recording: Just right Titled "Schubert-Soirée," this CD is as beguiling a collection of music written

■ beguiling a collection of music written for his family's chamber ensemble and visiting friends as you are ever likely to encounter. The polonaise, rondo, and *Konzertstiick* ("concert piece") are concerto-style works for violin that he composed between ages nineteen and twenty-one, and the German dances and minuets date from his sixteeth year. The instrumentation consists mainly of strings, with trumpets, oboes, and timpani turning up only in the *Konzertstiick*. Above all, there are enchanting melodies and lilting rhythms, but no show-off virtuoso stuff (the solo violin parts were written with his brother Ferdinand's abilities in mind).

Back in 1978 violinist Gidon Kremer recorded the concertante pieces for Deutsche Grammophon with a conductor, but here he assumes both the solo and conducting roles with marvelous finesse and flexible nuance, blending beautifully with his Chamber Orchestra of Europe colleagues. In canny contrast to the main string body, the trio sections of the dances are elegantly rendered by solo quintet. The recording features an intimate yet warm acoustic surround that perfectly conveys the ambience of a musical house party. Recommended without reservation. D.H.

> SHOSTAKOVICH: Symphonies Nos. 1 and 9 National Symphony. Rostropovich TELDEC 90849 (59 min) Performance: Top-drawer No. 1 Recording: Good

Shostakovich's remarkable First Symphony, written when he was only nineteen years old, has held a firm place in the repertoire ever since its first European per-







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CLASSICAL MUSIC

formance, under Bruno Walter in 1927. Most of the readings I have heard over the years have been marked by a certain brittleness and nervous hysteria, but under Mstislav Rostropovich's direction it is the sym-



phony's more tender aspect that seizes the attention in this latest recording. The tenderness comes through from the very first measures, where articulation is not merely precise but also endowed with flow and nuance, giving the music something of an added dimension. The scherzo goes at a fast clip, as it should, yet its central trio section is not breezed through but shaded with the greatest care in terms of color and dynamics. In the slow movement Rostropovich elicits blazingly passionate utterances from his strings. The finale is wonderfully cinematic, calling to my mind a picture of the young composer playing the piano to accompany silent movies.

The Ninth Symphony is as compact as No. 1, even though it's in five movements. From the seemingly innocuous but elegantly crafted first movement on, the work passes through episodes of rueful humor, menace, and sarcasm. Rostropovich does well generally with the somber elements. and the sizzling third movement (presto) and succeeding dark-hued largo are very good (with fine work by the solo bassoonist in the largo), but on balance his reading is on the heavy-handed side. For my taste Neeme Järvi has it right in his Chandos recording with the Scottish National Orchestra. The Teldec CD, however, has plenty of power and presence. DH

VOLANS: String Quartets Nos. 2 and 3 Balanescu Quartet

ARGO 440 687 (57 min) Performance: Intense Recording: Excellent

The South African composer Kevin Volans has achieved a remarkably successful melding of native Zulu music with the modern string quartet. His Quartet No. 2 ("Hunting: Gathering")—previously recorded, and very effectively, by the Kronos Quartet—is frankly descriptive and atmospheric, but the Quartet No. 3 ("The Songlines") from 1988 verges on greatness. It's a spare, abstract musical journey that goes into deep, uncharted terrains full of insistently hypnotic rhythms, abrupt melodic slides, and closely voiced chords that suggest Aaron Copland on peyote.

From a formal standpoint, both works may seem misshapen, but there's a convincing and original internal logic to the individual movements. The Balanescu Quartet's performances are tough and insightful, though that of the Second is less clean and stylish than the Kronos version. D.P.S.

Collections

BEAUX ARTS TRIO Spring Music—Warks by Baker, Rochberg, Rarem PHILIPS 438 866 (73 min) Performance: Classy Recording: Just fine

"Spring Music" is a highly varied and consistently interesting collection of works recently commissioned by the Beaux Arts Trio from American composers. The title piece, by Ned Rorem (b. 1923), is like a Poulenc divertissement with a Yankee accent. It comprises an idyllic "Aubade" featuring some charming decorative piano writing, a headlong "Toccata" interspersed with lyric episodes, an extended and rumi-



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BORODIN: Symphony No. 2; Petite Suite

State Symphony Orchestra of Russia, Svetlanov

RCA 62505 (63 min)

Evgeny Svetlanov's reading of the symphony is no competition either for Valery Gergiev's with the Rotterdam Philharmonic on Philips or the fiery 1978 one by Loris Tjeknavorian on a budget-price RCA CD. The seven piano pieces that make up the Petite Suite, expertly orchestrated by Glazunov, are agreeable listening and nicely played. The recording, done on tour, is fine in the strings and winds but a bit bass-shy in the percussion. *D.H.*

DUTILLEUX: Symphony No. 2 ("Le Double"); Timbres, Espace, Mouvement ("La Nuit Étoilée"); Métaboles

Orchestre de Paris, Bychkov

PHILIPS 438 008 (64 min)

Henri Dutilleux (born 1916) richly deserves his ever-increasing discography, and Semyon Bychkov brings a welcome visceral excitement to the music that's lacking in other, more refined recordings. Bychkov's approach works especially well in the flashy *Métaboles*, but the Symphony No. 2 lacks clarity and accuracy. The dry recording quality isn't especially flattering, either. Still, the CD also offers the first recording of the expanded, more substantial version of *Timbres, Espace, Mouvement*. D.P.S.

DVORAK: Piano Quintet No. 2; Piano Quartet No. 2

Pressler; Emerson String Quartet DEUTSCHE GRAMMOPHON 439 868 (75 min)

While pianist Menahem Pressler provides affectionate and authoritative leadership, the Emerson Quartet players are not very sympathetic colleagues. Far from immersing themselves in the spirit of each work, they respond with a "one size fits all" approach. Rudolf Firkusny, on RCA, has the less celebrated but far more persuasive Ridge Quartet attuned to his own elegant, warmhearted approach in the quintet, and the sound is more ingratiating, too, than the rather harsh acoustic on this CD. *R.F.*

HAYDN: Symphony No. 60 ("Il Distratto") ; Armida Overture; Symphony No. 91

Orpheus Chamber Orchestra DEUTSCHE GRAMMOPHON 437 783 (54 min)

The conductorless Orpheus Chamber Ensemble plays modern instruments and is not particularly tuned in to the niceties of period performance practice. But the players have a remarkable *esprit* as well as *esprit de corps*—along with wit, energy, and good humor. The vastly amusing symphony Haydn made out of his theater music to a play entitled *II Distratio* ("the absent-minded [one]"), the dramatic overture to the opera *Armida*, and the superb late symphony are all captured in a beautifully made recording. *E.S.*

TCHAIKOVSKY: Piano Trio BRAHMS: Horn Trio

Salerno-Sonnenberg: Meneses; Cerminaro: Licad EMI 54800 (75 min) Plenty of energy and tension in both of these performances—which, however, somehow fail to convince. The energy is for the most part the sort that calls attention to the performers at the expense of the music, and the recording's curious focus on the violinist, Nadja Salerno-Sonnenberg, distorts the essential coloring of the nusic. John Cerminaro's horn is all but swallowed up in the Brahms, Antonio Meneses's cello is little more than a background blur in the Tchaikovsky, and even

CHANTICLEER

Cécile Licad's piano seems strangely

RF



CHANTICLEER Mexican Baroque

veiled. Too bad.

TELDEC 96353 (58 min)

Observances in 1992 of the 500th anniversary of Columbus's arrival in this hemisphere brought to light a surprising amount of excellent music that resulted from the encounter of the indigenous culture with that of Europe. These Baroque compositions from Mexico rival in beauty what was being composed in Europe during the eighteenth century. The performances by the male vocal ensemble Chanticleer, accompanied by a small instrumental group, seem authentic and vigorous, and the recorded sound is warm. *William Livingstone*

SHARON ISBIN Nightshade Rounds

VIRGIN 45024 (62 min)

Sharon Isbin has commissioned and given the first performances of more new guitar music than just about anybody, including the title piece here, by Bruce MacCombie, and Joan Tower's Clocks, both dedicated to her. She also has a wonderful mastery of her instrument, technical and musical, that permits her to make Britten's difficult late masterpiece Nocturnal into something truly moving. That's the highlight, but the two Gershwin piano preludes arranged by Carlos Barbosa-Lima, the new works, a short piece by John Duarte, and Walton's amusing Five Bagatelles add up to an attractive program. E.S.

native "Fantasia," a brief, Satie-like "Bagatelle" in Rorem's most elegant art-song manner, and a fiery "Presto" finale with jazz elements and a recollection of the opening pages to round it all off.

Roots II by David N. Baker (b. 1931) also has five movements, but the inspiration is unmistakably African-American. The most telling pages are in the opening "Incantation" and the deeply plaintive "Sorrow Song," which seems to stem from the rural black spiritual. "Dance in Congo Square" recalls Louis Moreau Gottschalk, and the other two, "Boogie Woogie" and "Jubilee," suggest Morton Gould's masterly 1941 Spirituals for Orchestra.

George Rochberg (b. 1918), originally a hard-core "modernist," is today a kind of postmodern eclectic. *Summer*, 1991 grew out of his visit to Leningrad and Moscow in 1989, when the Soviet empire was on the verge of disintegration. The music evokes a sense of impending chaos, now violent, now pensive, with fragmentary quotes and near quotes from the Russian musical past.

All three works test the mettle of pianist Menaham Pressler, violinist Ida Kavafian, and cellist Peter Wiley to the utmost. They come through with flying colors, as does the Philips production crew. D.H.

CANADIAN BRASS Gabrieli for Brass PHILIPS 438 392 (64 min) Performance: Full-blast brass Recording: Antiphony to the max

The Canadian Brass and their fans have been in love with Gabrieli seemingly forever. Some of the old favorites—the *Sonata Pian' e Forte*, for example—are included here, but this disc differs a bit from more typical Canadian Brass Gabrieli collections. It includes a large number of arrangements of mass sections, motets, and other period vocal music by Heinrich



Schütz, Orlando di Lasso, Claudio Monteverdi, and both Andrea and Giovanni Gabrieli. That takes extra musicians, here a second brass quintet from the New York Philharmonic and a brass octet from the Philadelphia Orchestra. The result is antiphony to the max, and in modern digital sound. If you have a Dolby Surround decoder and four or five speakers, you can recreate the full effect, but even in plain ol' two-channel stereo it's pretty impressive. Just don't look for subtlety or authenticity: This is a purely modern, full-out brass blast with suitably lyric touches. *E.S.*

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30 Years Ago

In his October 1964 editorial, Furman Hebb directed readers to STEREO REVIEW's second "Playable Page"—a detachable paper-based record featuring soprano Mirella Freni. Apart from its being the first bound-in stereo recording in magazine history. Hebb said, it was "a perfect choice to demonstrate the gifts of a remarkable new singing star."

New products this month included the Ampex PR-10-4 stereo tape deck, a two-speed, four-track version of the PR-10 professional deck; the Freeman 800 three-speed stereo tape recorder with built-in amp and speakers; and McIntosh's C24 solid-state stereo preamp with a frequency response of 20 to 20,000 cps [Hz]. In test reports, Julian Hirsch examined the Dynaco FM-3 tuner kit and the Uher 8000 portable tape recorder, a \$500 machine he found versatile but inconvenient ("One cannot expect to use it without a careful study of its instruction manual and a good deal of practice").

About face: Reviewing "A Hard Days Night" and "Something New," Gene Lees, who had panned the Fab Four back in May, reversed himself after hearing Beatles songs in non-rock contexts. "As far as I'm concerned," he wrote, "they're the best thing to happen in pop music in years."

Stereo Review



20 Years Ago

Abu Dhabi honeymoon: In "Audio Questions and Answers," reader Ronald Krausner, of Los Angeles, reflected anxieties over the energy crisis and the OPEC oil embargo. "I think that it is absurd," he wrote, "that you people continue to advocate the use of high-powered amplifiers. Have you no conscience?"

In Best of the Month, George Jellinek recommended



John Denver and friends, 1974

The Superex EP-5, 1974

Georg Solti's version of Mozart's Così Fan Tutte on London ("extremely intense") and Chris Albertson endorsed jazzman Bob James's "One" on CTI ("A fine example of lush, jazz-flavored pop"). In other reviews, Latinophile William Livingstone was taken with a five-disc history of flamenco on Murray Hill ("No one will ever accuse the numerous performers here of not having suffered enough"). And John Denver fan Noel Coppage was appalled by the singer's "Back Home Again," suggesting that "this way lies self-parody, a network TV contract . . . maybe even Las Vegas engagements.*

Among the new products featured were the Wollensak 4775 cassette deck, the company's first to provide Dolby B noise reduction using a single integrated circuit for each channel, the Fisher 634 four-channel receiver with both CD-4 and SQ circuitry, and the Kenwood KP-5022 automatic single-play turntable. Julian Hirsch tested the Sequerra Model | FM tuner, created by the same design team responsible for the classic Marantz 10B; the Jensen Model 15 Serenata speaker, a large floor-standing. four-way, ducted-port system with five drivers; the Superex EP-5 stereophones, a dynamic/electrostatic hybrid; and the Technics RS-676US cassette deck, an unusual front-loading model with solenoid-activated transport mechanism.

Taste Is Timeless: Usually serious prog-rock keyboardist Rick Wakeman of Yes told interviewer Steve Simels that his favorite single of the moment was Ray Stevens's ode to public nudity, *The Streak*.

Stereo Review



10 Years Ago

The September 1984 cover story, a buyer's guide to compact disc players under \$600, featured comparisons of twenty-seven models ranging from Radio Shack's Realistic CD-1000 (\$399.95) to Teac's PD-111 with twenty-three-track memory (\$599.95). In test reports, Julian Hirsch evaluated ADC's top-of-the-line TRX-3



ADC's TRX-3 cartridge, 1984

phono cartridge, the AudioSource RTA-One spectrum analyzer, and (in a special report with Christopher Greenleaf) Sony's CDX-R7, the first car CD player.

Block that metaphor! Reviewer Mark Peel said of Josie Cotton's "From the Hip" that the album had "all the noisy hauteur of a Tex-Mex waitress explaining the menu to a party of Eskimos." —Steve Simels

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



Call us crazy, but we think a surround-sound speaker should be designed to surround you with sound. To make your ears think they're inside a submarine. Or a baseball park. Or a heavily armored Petrusian galactic battle fortress. No problem for the Boston 575x dipolar surround speaker. It takes full advantage of reflected sound to create a realistic movie experience. Here's how. In front of the 575x is a single woofer re-creating low frequencies that the human



a specially designed combination tweeter/midrange—one firing forward, the other back. These drivers are dipolar, or "out of phase" with each other (when one is pushing air out, the other is pulling air in). As a result, sound from the 575x reflects off several things—walls, ceiling, floor, your prized swizzle

ear can't localize. On either side is

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



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



Let's clear up the confusion. Use the 575x in a THX° system, and it sounds great. Use it in a Dolby° Pro Logic° setup, and it also sounds great. Sound good? Great.

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



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