

Stereo Review

SEPTEMBER 1995 • US \$2.95 • CANADA \$3.95 • UK £1.95

SPEAKER SPECIAL

CHOOSING THE RIGHT LOUDSPEAKERS

HOW TO HOOK UP A SUBWOOFER

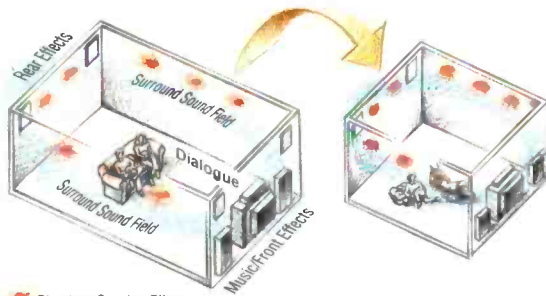
HOME THEATER: A CLOSE LOOK AT 10 TOP CENTER SPEAKERS

SPECIAL TEST: DEFINITIVE TECH BP 2000 SPEAKER SYSTEM



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new
dimension
a
third
dimension
a
good
dimension.

Was this their intention?
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and heard a voice say,

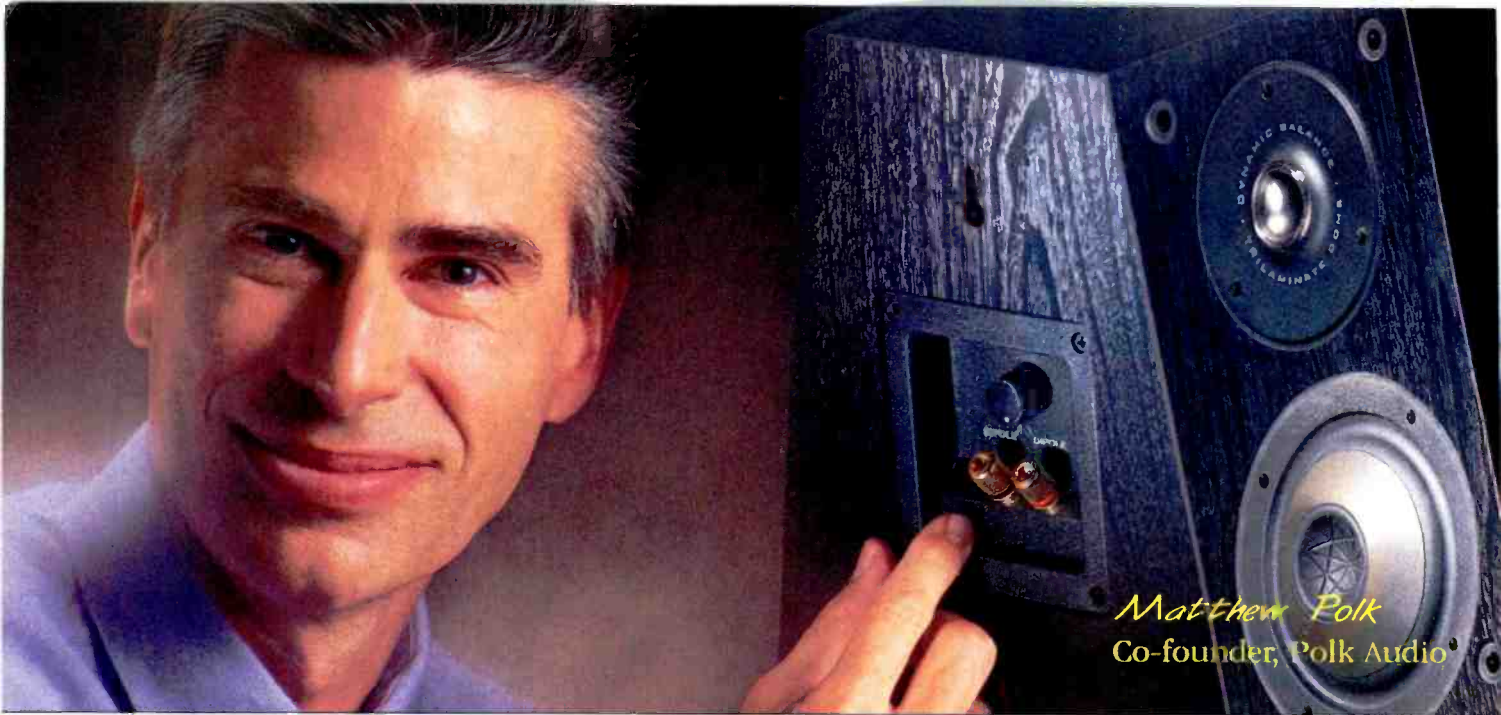
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What Hi Fi, Great Britain, 1995

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HomeEntertainment, Great Britain, 1995

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Cover

Speakers in the spotlight: counterclockwise from upper left, Cambridge SoundWorks Surround, KEF 100 center channel, Klipsch KG 5.5 and Definitive Technology BP 2000 towers, Velodyne VA-1215X subwoofer, Acoustic Research SW30 subwoofer, Paradigm Mini-Mk3, and Mission 731 bookshelf.

Photograph by Roberto Brosan

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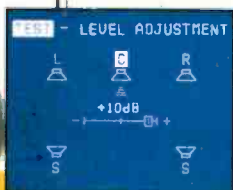
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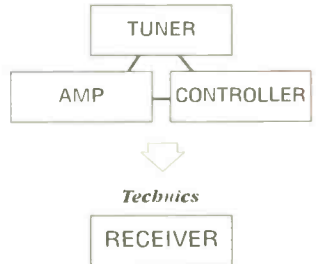


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LETTERS

More Home Improvements

Thanks for Daniel Kumin's informative "Home Improvement" in July. I would like to add a few no-cost or low-cost suggestions for further improving an A/V system:

1. Keep your TV screen clean. Any charged surface is a dust collector.

2. Check your cable-TV point of entry and room wiring. How many splitters and what size taps have the "caring technicians" installed? If possible, use a separate splitter to your main screen before the main house feed. Are the splitters that were used top-quality? Maybe a few dollars for better ones would bring visible improvements.

3. Ask your cable company to measure the signal level at the area feed and to correct it if necessary.

4. Do not run your audio and video cables parallel with your power cords. Also, keep your speaker lines as short as possible and never loop the excess.

5. Finally, just in case, get a good surge protector, and document your equipment with serial numbers and photos.

WARREN EPHRAIM
Fairfield, CT

None of the articles I have read recently about setting up or upgrading home theater systems, including the very good article by Daniel Kumin in your July issue, mentions adding a subwoofer to the center channel and operating the Dolby Pro Logic circuit in the Wide mode. To me, this is one of the best improvements I've made to my system. Also, nonsurround TV fare comes mostly through the center channel in Dolby Pro Logic, and I get the full range of sound, commercials and all. I used an impedance-matching transformer to wire my sub to my receiver, which has only one set of center-speaker outputs.

MEL REINGOLD
Salmon, ID

AR Memories

Julian Hirsch's June comparison of the Acoustic Research AR 303 with the old AR-3a brought back memories. Shortly after I joined AR in 1965, Roy Allison and Ed Villchur assigned me the task of designing new drivers and crossovers for the AR-3. The AR-3 had 2-inch midrange and 1 $\frac{3}{8}$ -inch high-frequency phenolic drivers, not 1 $\frac{1}{2}$ and $\frac{3}{4}$ inches as Mr. Hirsch stated. Working the 11-inch woofers out to 1 kHz compromised the midrange because of the woofer-dispersion performance.

It was determined that new midrange and high-frequency drivers would be needed. Accordingly, I designed a 1 $\frac{1}{2}$ -inch soft-dome midrange and a $\frac{3}{4}$ -inch impregnated-paper-dome tweeter. The new midrange could be crossed over at 575 Hz, thus eliminating the woofer-dispersion problem. The new $\frac{3}{4}$ -inch tweeter had superior dispersion but at some sacrifice in efficiency.

The new speaker was temporarily designated the AR-3x. It had a somewhat "laid-back" quality some called the "New England sound." In reality the effect was the result of the tweeter's compromised efficiency. Ultimately Roy Allison designed the AR-LST, which used arrays of the new drivers operating with automatic transformers compensating for the disparate efficiencies. One might say that, like politics, loud-speaker design is "the art of the possible."

CHARLES MC SHANE
Mt. Prospect, IL

Caption Contestants

I was surprised when I wasn't selected as the winner of the 11th Annual Rodrigues Cartoon Caption Contest (July).

My friends had warned me that my classic entry — "Woofer?! Hell, I hardly even know her!" — might be a little risqué for STEREO REVIEW. But clearly my entry is no more sexually suggestive than the winning selection (which is, by the way, quite clever and witty).

So, like the couple shown in the cartoon, I am baffled.

WYNN MARTIN
Houston, TX

No doubt your obsession with winning stems from your first name. Please consult your therapist.

Unfortunately, I saw your Cartoon Caption Contest too late to enter. Otherwise, my caption would have certainly won:

"Hi, Good Neighbor! I'm Harman Kardon from the planet Cerwin-Vega in a galaxy almost Infinity miles from here. We sure do love the Pioneer life here in Aiwa."

STEPHEN J. LOSBEN
Meadowbrook, PA

No doubt your obsession with winning stems from your surname, an anagram of "N.B.: Lose." Please consult your therapist.

CD Goofs

June "Bulletin" described the "unforgettable" experience of a mislabeled Nat King Cole CD on Capitol. But Capitol is not the only label to have produced a few surprises, not by a long shot.

I began buying CD's in January 1985, and among my early purchases that year was the Dream Academy's debut album on Warner Bros., featuring their popular hit, *Life in a Northern Town*. Imagine my surprise when the player registered twelve tracks instead of the listed ten and organ music greeted me. "This is not the *Life in a Northern Town* I've been hearing on the radio," I thought. Epic had a similar goof with the Heart album "Passionworks." The booklet and case insert were correct, but the CD itself was Heart's "Greatest Hits"

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album. At least the labeling on that CD was consistent with the music. KENT RADEK
Bellevue, NE

Looking for Magic

I have just read Rebecca Day's July article about Digital Music Express (DMX), in which she refers to a product called the Mondial Antenna Ground Isolation Circuit, or Magic, which breaks ground loops associated with the connection of coaxial cable antennas (from cable-TV companies) and audio/video systems. It sounds like just what I need! Please tell me where I can obtain this product and/or how to contact Mondial Designs. BRENT A. DAVIS
Wichita, KS

You can reach Mondial at 20 Livingstone Ave., Dobbs Ferry, NY 10522; phone 914-693-8008, fax 914-693-7199.

The Fate of Laserdiscs

I recently purchased a laserdisc player, but with the news over the past few months about the coming digital videodisc (DVD), I am justifiably concerned about my investment. In "Digital Surround Comes Home" in May, Michael Riggs states that the DVD format uses a red laser to read the discs, as opposed to the longer-wavelength infrared laser used in CD/laserdisc players. Is it conceivable to upgrade a current laserdisc player with a red laser so that it could read the DVD-formatted discs, or will the laserdisc format eventually be phased out completely?

RALPH CALABRIA
East Brunswick, NJ

Modifying an existing laserdisc player to handle DVD's as well would be impractical. There are simply too many differences between the formats, starting with the fact that the video on DVD will be in compressed digital form, whereas the video on laserdiscs is frequency-modulated analog. It certainly would be possible to build a combination player that would handle DVD as well as CD and laserdisc, however, and such players might be produced in the future. DVD will probably supplant laserdisc eventually, though the process will no doubt take a number of years, particularly with regard to the production of the discs themselves, as there is already a large installed base of laserdisc players.

Corrections

The July cover photo should have been credited to Christopher Gould. In the August test report on the Carver A-400X power amplifier, the measurement given for dynamic power into 8 ohms should have read 332 watts. We regret these errors. □

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

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NEW PRODUCTS



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Pioneer's Elite Series SP-99D digital processor performs Dolby Pro Logic and six-channel Dolby Surround AC-3 decoding. In addition to an AC-3 input, the unit provides coaxial and optical digital inputs, eight analog outputs (including dual center and subwoofer outputs), 18-bit

digital-to-analog (D/A) conversion circuitry, and three ambience modes for music and non-surround-encoded programs. Finish is gloss black with rosewood side panels. Price: \$1,530. Pioneer Electronics, Dept. SR, 2265 E. 220th St., Long Beach, CA 90810-1639.



▲ CAMBRIDGE SOUNDWORKS

The Cambridge SoundWorks Ensemble IV home theater speaker system comprises five 4-inch-square satellites, each sporting a suede-textured charcoal finish and housing a 3-inch driver rated to play down to 150 Hz, and a 6½ x 8 x 12-inch dual-chamber bass module with a 5¾-inch dual-voice-coil woofer and a black

vinyl finish. A 100-foot spool of speaker wire and a wire stripper/cutter are included. The Ensemble IV is available factory-direct for \$380 (plus shipping) with a thirty-day money-back guarantee. Cambridge SoundWorks, Dept. SR, 311 Needham St., Newton, MA 02164-9979; phone, 1-800-367-4434.

• Circle 121 on reader service card

ENERGY ▶

The least expensive speaker in Energy's four-model Connoisseur Series, the C-2 (shown with the SST-21 stand, \$120 a pair) combines a 1-inch aluminum-dome tweeter and a 6½-inch woofer in a 17¾-inch-tall vented enclosure with biamp terminals. Frequency response is given as 40 Hz to 25 kHz ±3 dB, sensitivity as 88 dB, and maximum power-handling capacity as 130 watts. Price: \$500 a pair in black-ash laminate (shown); \$600 in high-gloss black or rosewood. Energy Loudspeakers, Dept. SR, 3641 McNicoll Ave., Scarborough, Ontario M1X 1G5.

• Circle 120 on reader service card



▼ SONY

One of three Digital Satellite System (DSS) packages from Sony, the entry-level SAS-BS1 includes an 18-inch single-output dish with a Signal Seeker LED that simplifies positioning the dish during installation. The satellite receiver, which is equipped with two sets of

A/V outputs and a standard antenna input, has a 32-bit microprocessor that supports a "fast" multi-mode on-screen channel-guide/menu system. The SAS-BS1 satellite package also includes a remote control. Price: \$749. Sony, Dept. SR, 1 Sony Dr., Park Ridge, NJ 07656.



NEW PRODUCTS



◀ POLK AUDIO

Designed to occupy a minimum of floor space, Polk's 36¾-inch-tall RT12 speaker has a footprint of only 8¾ x 12½ inches. The magnetically shielded speaker combines a 1-inch dome tweeter and two 6½-inch woofers in a ported cabinet finished in either black ash or oak woodgrain vinyl. Low-frequency limit (at -3 dB) is given as 42 Hz, sensitivity as 90 dB, and maximum power-handling capacity as 250 watts. Price: \$799 a pair. Polk Audio, Dept. SR, 5601 Metro Dr., Baltimore, MD 21215.



ALPHASONIK ▲

One of the first car amplifiers produced under a joint venture with Zed Audio, Alphasonik's HBX-2150 is rated to deliver 150 watts per channel into 4 ohms and 250 watts into 2 ohms. In bridged mono mode, it's rated to kick out 500 watts into

4 ohms. Highlights include a defeatable 80-Hz low-pass filter and a direct mode that bypasses the amplifier's op-amp stage. Price: \$599. Alphasonik, Dept. SR, 701 Heinz Ave., Berkeley, CA 94710.

• Circle 122 on reader service card

▼ PARASOUND

The C/DC-1500, Parasound's first CD changer, handles five discs and employs a hybrid 1-bit/18-bit digital-to-analog converter. It has a shuffle-play mode, a coaxial digital output, gold-plated Tiffany-style RCA jacks, and a remote control. Price: \$650. The user-installable

Advanced Digital Adapter Module (not shown), available as a \$225 option, adds a glass-fiber optical output and a balanced AES/EBU output with an XLR connector. Parasound, Dept. SR, 950 Battery St., San Francisco, CA 94111.

• Circle 123 on reader service card



PHASE TECHNOLOGY ▲

Phase Technology's Octave 1.0 powered subwoofer has a 15-inch woofer, a 240-watt amplifier, and a two-way active crossover (with 100-, 80-, and 60-Hz cutoff points), all in a cabinet measuring 18 x 21 x 20 inches and finished in black laminate.

It features auto-on and soft-clipping circuits, line-level and high-level inputs, a phase switch, and a level control. Price: \$949. Phase Technology, Dept. SR, 6400 Youngerman Circle, Jacksonville, FL 32244.

• Circle 124 on reader service card



ARCAM ▶

Arcam's Xeta One A/V integrated amplifier offers Dolby Pro Logic surround-sound decoding and is rated to deliver 60 watts each to the three front channels and 20 watts each to the surround channels. It has eight audio inputs, four composite and two S-VHS video inputs, five line-level

outputs (including one for a subwoofer), a Cinema EQ setting to tame overly bright film soundtracks, and a Hall mode for music. Price: \$1,900. Arcam, distributed by Audio Influx, Dept. SR, P.O. Box 381, Highland Lakes, NJ 07422-0381.

• Circle 125 on reader service card

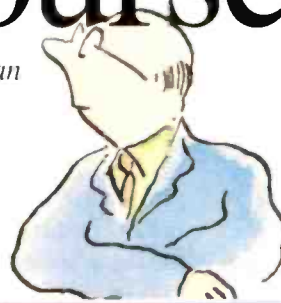


We couldn't have said it better ourselves.

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

“...this is a product that deserves attention.”

“This is the kind of product that shows the best of the high end can be made truly affordable.”



“In short, the Adcom GFA-5800 stands out even in a world where almost all amplifiers now sound good.”

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“The imaging, soundstage, dynamics and transparency of the Adcom GFA-5800 had the kind of realism and integration I only expect to find in far more expensive products.”

“Just as Adcom once changed the standards of the power amplifier market with the 555, it has introduced a new product that may similarly change the market again.”

The Adcom GFA-5800 amplifier is quite possibly the best amplifier you may ever hear. We know it sounds better than others selling for more than twice its price. Delivering 250 watts continuous per channel into 8 ohms between 20 Hz and 20 kHz, its circuit design and component specifications are in a class by itself.

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NEW PRODUCTS

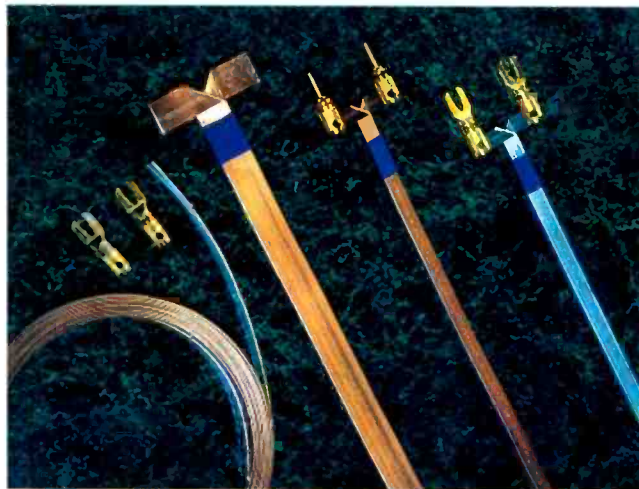


▲ LEADSINGER

Instant karaoke: Electrosales' Leadsinger wireless microphone and MIDI sequencer — a.k.a. the Band in Your Hand — broadcasts your voice and an instrumental accompaniment to any FM radio. Just pop a Song Chip into the mike, select a tune, and start crooning. It even has echo and

pitch controls. Song Chips containing MIDI computer files of thirty songs are available for \$49 each and come with books of lyrics. Price: \$199 to \$249 (includes one Song Chip). Electrosales Co., Dept. SR, 13 W. 28th St., New York, NY 10001.

• Circle 126 on reader service card



▲ ALPHA-CORE

Goertz MI flat speaker cable from Alpha-Core, only 0.04 inch thick, consists of two solid conductors individually wrapped in a polyester dielectric and covered with a clear Lexan sheath. Four models are available: 13-gauge MI 1 copper (\$4.76 a foot), 10-gauge MI 2 copper (\$8.85 a foot), 12-gauge

MI AG 1 silver (\$35.56 a foot), and 9-gauge MI AG 2 silver (\$63.10 a foot). Spade, pin, and banana-plug connectors are sold separately in sets of four (\$19.70 per set). Bulk discounts are available. Alpha-Core, Dept. SR, 915 Pembroke St., Bridgeport, CT 06608.

• Circle 127 on reader service card



◀ ALLSOP

Allsop's "one-step" CD Repair Kit includes a 1-ounce bottle of a mildly abrasive water-based solution that's said to remove light scratches from the surface of a CD, four cotton cloths, and a DiscGrip base that holds the disc while it's being polished. Price: \$11.99. Allsop, Dept. SR, P.O. Box 23, Bellingham, WA 98227-0023.

• Circle 128 on reader service card

▼ SONANCE

Sonance's MRC100 source switcher uses hierarchic signal sensing to route selected audio and video sources automatically to a whole-house music system or a home theater. It has three audio and three A/V inputs. Whichever audio source is active is routed to the audio zone. When a VCR or

other video source is activated, its audio and video output is routed to the home theater; if no A/V source is in use, the active audio signal goes there too. Price: \$699. Sonance, Dept. SR, 961 Calle Negocio, San Clemente, CA 92673-6202.

• Circle 129 on reader service card



JBL ▶

The JBL SoundEffects Media 2 powered computer speaker system comprises two 11½-inch-tall, magnetically shielded speakers with swivel-joint bases that enable them to be positioned for optimum imaging. Built into the base of one speaker is a 5-watt-per-channel amplifier, active equalization and auto turn-on/off circuitry, two mini-plug stereo inputs, a bass-contour control, and a line-level subwoofer output. The two-way speakers have 3-inch woofers and are rated down to 100 Hz. Price: \$160. JBL, Multimedia Division, Dept. SR, 80 Crossways Park West, Woodbury, NY 11797.

• Circle 130 on reader service card



"This Is The Best \$199 You Can Spend On Yourself"

PC magazine

SoundWorks™ – our 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 hundreds of applications.



Henry Kloss

SoundWorks consists of two satellite speakers (app. 3 1/2" x 3 1/2" x 3 1/2") and a compact, 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 long-throw/wide-range design that reproduces

"SoundWorks has the most natural musical timbre."

The New York Times

high and mid frequencies down to 150 Hz, without the need for a "mid-range" driver. *SoundWorks* comes with satellites finished black, or in "computer-beige." They can be used as is, hung on walls using their back-panel slot, used with their mini-stands, or they can be attached to a computer monitor with our velcro kit (supplied).

"...head and shoulders above the others..."

MacUser magazine

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 – behind your TV set, under your 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



\$199⁹⁹

Amplified Subwoofer/satellite speaker system

a portable CD player, a "set and forget" bass level control, and connecting terminals for the satellite speaker wires. It also has an input for a 12 volts – so you can plug *SoundWorks* into the cigarette lighter in your car or boat!

The Sound.

In terms of frequency range, tonal balance, stereo imaging and overall sound, *SoundWorks* compares very favorably with component music systems costing far 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, *SoundWorks* is ideal for use as a multimedia speaker with any computer. 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 with our optional carrybag, you can travel with it.

The Price.

You can buy *SoundWorks* direct from Cambridge SoundWorks, for only \$199⁹⁹. We haven't heard a system for anywhere near its price that we think sounds nearly as good.

"...really amazing...exceptionally good... sounds terrific."

Audio magazine

We Eliminate The Risks.

With our 30-day risk-free home audition, you can listen to *SoundWorks* the right 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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(1-800-367-4434)



Because SoundWorks is so compact, and because it works on 110 or 12-volts, it's perfect for cars, RV's and boats. With our optional carrybag (\$49⁹⁹), it makes an ideal musical traveling companion. You can even play the system while it's in the carrybag.



We Know How To Make Loudspeakers!

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TIME DELAY

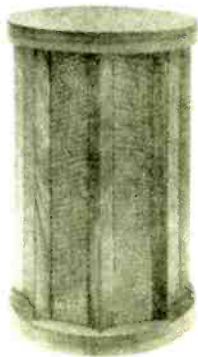


Harman Kardon's VCD1000 VHS Hi-Fi VCR, 1985



30 Years Ago

Finn de siècle: William Anderson, introducing in his editorial the September 1965 tribute to Scandinavian composers Jean Sibelius (Finland) and Carl Nielsen (Denmark), noted that Nielsen's reputation was increasing while Sibelius seemed to be going out of style. "I do not resent this," he added wistfully, "but it makes me a trifle sad."



Circle-O-Phonic speaker, 1965

New products this month included two new stereo receivers from Bogen (one FM only) with frequency-response ratings of 20 Hz to 20 kHz ± 1 dB. Norelco's AKG DX-11 dynamic cardioid microphone with a built-in reverb element, and a new speaker system from Circle-O-Phonic with a revolving tweeter and a high-compliance upward-firing

woofer. In test reports, Julian Hirsch examined the Oki 555 portable stereo tape recorder (17 pounds without speakers) and the Euphonics CK-15-LS phono cartridge, which had its own power supply (it plugged into an AC outlet on an amplifier).

Thus anticipating alternative rock: Unimpressed by "Glenn Miller Time, 1965," critic Gene Lees suggested, "Maybe when some of the bandleaders who have made livings out of playing tributes to Miller are also dead, we can have albums in tribute to tribute albums."



20 Years Ago

Except for listening to *Rocky Mountain High*: In Noel Coppage's September 1975 profile, country star John Denver claimed, "There's no such thing as wasting time."

New products noted this issue included six eight-track tape players from Motorola. Associate technical editor Ralph Hodges, reporting on the Consumer Electronics Show, got excited by several introductions, including a 150-watt-per-channel Class A power amp by Stax, which he called "astonishing." Julian Hirsch tested the Sony ST-4950 tuner ("a simply beautiful product") and the

Philips 2096S two-speed, single-play electronic record player ("one of the most attractive as well as functional pieces of record-playing equipment we have seen in some time").



Motorola eight-track, 1975

In Best of the Month, Richard Freed endorsed Leonard Bernstein's Columbia recording of Haydn's Mass No. 12 with Frederica von Stade ("hardly less glorious than the music itself"), and Noel Coppage took a liking to the Earl Scruggs Revue's "Anniversary Special Vol. 1," an all-star folkie jam. In other reviews, William Livingstone enjoyed a couple of new recital albums by under-recorded diva Renata Scotto. Steve Simels delivered the first of his many raves for a Richard Thompson album (here the classic "I Want to See the Bright Lights Tonight"), and Paul Kresh dismissed the original-cast recording of the Broadway musical *Shenandoah* as "Death warmed over."

Monsters from the Id: Reviewing Teresa Brewer's "Unliberated Woman," a

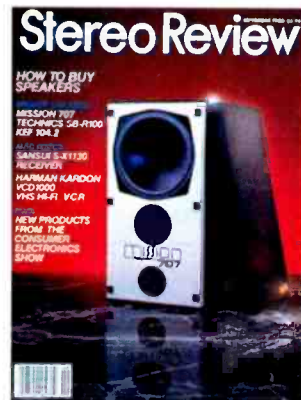


David Bowie lounging, 1985

troubled Peter Reilly compared it to his recurring nightmare of being "forced to take a coast-to-coast trip on the subway with Ethel Merman as my only traveling companion."

10 Years Ago

Larry Klein led off this speaker-themed issue with "How to Buy Speakers," David Ranada discussed "Music to Judge Speakers By," and Daniel Sweeney examined the current state of the art in "The Search for the Perfect Speaker." In "CES Showstoppers," Gordon Sell and William Burton reported



on new products including the wall-shaking Polk SDA Signature Reference speaker system (\$2,590). And in test reports, Julian Hirsch confronted Harman Kardon's VCD1000 VHS Hi-Fi VCR ("state of the art") as well as the speaker shown on the cover, Mission's Model 707, a two-way bookshelf system, concluding, "A lot of things have been done right in its creation, and the proof is in the listening."

Return of the Lizard King: Reviewing David Bowie's "Serious Moonlight" video, Louis Meredith opined that the star "looks suspiciously like Lily Tomlin doing lounge singer Tommy Velour."

— Steve Simels

Introducing *Ensemble*® IV

The Most Affordable Sub/Sat Speaker System Ever By Henry Kloss.

Ensemble IV is an ultra-compact, very affordable subwoofer/satellite speaker system designed by Audio Hall of Fame member Henry Kloss (founder of AR, KLH and Advent). It maintains the precise octave-to-octave tonal balance of our original *Ensemble* system, which *Audio* magazine said, "may be the best value in the world."



Henry Kloss

It doesn't have quite the deep bass extension as the original *Ensemble*, and it won't play as loudly. But in terms of performance for the dollar, we believe it has no serious rival.

The Classic *Ensemble* Sound.

We believe the single most important factor in designing a musically accurate speaker is tonal balance. A properly designed speaker should not put any extra emphasis on one octave versus another. Henry Kloss spends an extraordinary amount of time "voicing" his speaker designs for precise, octave-to-octave tonal balance. The result is that *Ensemble IV* has an overall sound very similar to the more expensive members of the *Ensemble* family. What it sacrifices is the lowest half-octave of deep bass, and power handling capability.



Ensemble IV Home Theater is identical to the basic *Ensemble IV* system except that it has five satellite speakers instead of two. It's perfect for use in surround sound systems with Dolby Pro Logic®. Price \$379⁹⁹

Great Sound, Anywhere.

Ensemble IV's satellite speakers are small enough to fit in the palm of your hand (4" x 4" x 3 5/8"). And its subwoofer is about the



\$229⁹⁹

The *Ensemble IV* Subwoofer/Satellite Speaker system

size of a shoebox (6 1/2" x 8" x 12"). Since the subwoofer can be put in out-of-the-way places — behind drapes, under furniture — *Ensemble IV* can fit into any room, no matter how small. It's perfect for use in apartments, dorms, offices, dens, kitchens and bathrooms.

The Satellites.

Each *Ensemble IV* satellite incorporates a unique wide-range, long-throw three inch driver capable of reproducing notes down to 150 Hz, without the use of a second driver. Magnetically shielded, they won't distort your TV or computer screen. Each satellite is finished with a scratch-resistant, textured charcoal surface, and comes with a premium metal grille instead of the inexpensive fabric used by many other speakers in *Ensemble IV's* price range. Because of their size, they'll fit just about anywhere. Wall-mounting hardware is included.

The Subwoofer.

The lowest bass notes are reproduced by *Ensemble IV's* shoe box-sized subwoofer. It uses a remarkable 5 3/4" bass driver with dual voice coils. The driver is mounted in a true acoustic suspension cabinet. It fires into a second "tuned bandpass" cavity within the cabinet which filters out unwanted higher frequencies. The careful engineering of this

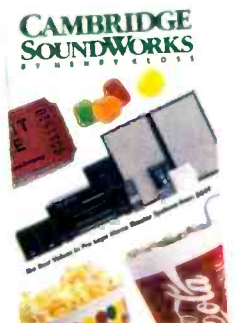
design allows *Ensemble IV* to combine deep bass response with high efficiency. Henry Kloss says, "*Ensemble IV* is the smallest and most affordable system I can design for use with any amplifier or receiver and still provide deep, really satisfying bass." Since low frequency bass is non-directional, the subwoofer can be hidden behind or under furniture.

Factory-Direct Savings.

Cambridge SoundWorks products are available only direct from us, or through cost-efficient Best Buy stores nationwide. Because of our efficient distribution, you get unbeatable quality and performance for your dollar. After you hear *Ensemble IV*, we think you'll agree that it sounds as good or better than speakers selling for hundreds more.

We Eliminate The Risks.

Ensemble IV is backed by our 30-day Total Satisfaction Guarantee. Try it in your home, with your music. If you don't like it, return it for a full refund. We even refund your original regular ground UPS shipping charges.



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PERIPHERALS

PRODUCTS AND TRENDS

THAT GO BEYOND

MAINSTREAM AUDIO/VIDEO

The Truth About Online Music Services

BY CARY LU

The information superhighway will, according to all the hype, change the way we work and play. In truth, the information highway isn't all that "super" today; you can find far higher-quality information at any well-stocked public library. But if you have both patience and determination, you can get some interesting nuggets about music and A/V gear delivered to your computer screen via online services. And the best of today's online musical offerings provide a glimpse of what the future might bring.

What You Need

To tap into an online service, you'll need a Windows-equipped or Macintosh computer, a fast modem — at least 9,600 bits per second (bps) but preferably 28,800 bps — and a phone line. To listen to music on a Windows computer, you also need a sound card and external speakers. You don't need any peripherals to play mono sound on a Mac, but you'll need external speakers for stereo with most models.

Among the many online choices, the World Wide Web portion of the Internet offers the most visually appealing and interactive information. On the Web you can access colorful screens that resemble magazine pages complete with text, graphics, and pictures. You can click on highlighted text or graphical icons to listen to music, download a file into your computer, or jump to another page somewhere else in the Web.

The way information is served up by the three major commercial online services is less appealing. America Online is able to display one picture with text, Prodigy can only manage stick drawings with text, and CompuServe is unable to show graphics and text at the same time. You can't hear sound or watch a video clip over the commercial services unless you search

through a sort of file cabinet, select a file, download it, and play the file using a separate piece of sound software.

The commercial online services are organized somewhat like a newsstand, where the main offerings are prepared by a variety of established publishers, or "information providers." By contrast, the Internet started out as a non-commercial information network of computers around the world; although many major music publishers put information on the Internet, a far larger portion of Internet offerings comes from individuals and small groups. The commercial services decide who can publish in their domains, but anyone can put information up on the Internet. Thus, small publishers of alternative music have the same access to the Web as big record labels.

As a result, the Internet offers far more variety and energy than the commercial online services. But since there are no editors shaping Internet material, someone with nothing to say can publish just as easily as a skilled writer or designer with insight and

style. The commercial services have editors in their main areas.

The vast outpouring of Web pages in recent months makes finding the good stuff both difficult and tedious. For example, more than 6,000 Web pages deal with music in some way. And flipping through pages online is far slower than browsing through a magazine or book. AOL and CompuServe offer several hundred screens on music and audio; Prodigy has only a few dozen. Because of the wide interest in the Internet and particularly the Web, the three big commercial services now offer access to Web pages in addition to their own material.

What It Costs

As for pricing, AOL and Prodigy charge \$2.95 an hour, CompuServe \$4.80 an hour. For Web access you can also connect via an independent Internet provider, typically for \$1 to \$2 an hour. In addition, you have to pay for the phone call. In most cities you can call a local number, so if you have flat-rate service you don't pay

Bricker, Pam, & Harris, Rick, *"Too Close for Comfort"*
Jazz, Easy Listening
Washington, D.C., USA
Date Uploaded: 1994-08-24

Jazz, with an emphasis on vocals

Jazz

* A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Jump to: 2nd Story
AX
Bricker, Pam, & Harris, Rick

Jump type: Band Page © Section ○

Choose Jazz from the Internet Underground Music Archive, select the group Bricker & Harris, and you get a photo, a description of their work, and the option to sample a track.

The Critics Love Ensemble® Speakers. You'll Love Our Factory-Direct Prices.

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

Stereo Review

Audio magazine once said our *Ensemble*® speaker system may be "the best value in the world." And *Stereo Review* said, "It's hard to imagine going wrong with *Ensemble*." Dozens of critics and thousands of customers have applauded our *Ensemble*, *Ensemble II* and *Ensemble III* speaker systems. Designed by Henry Kloss (founder of AR, KLH and Advent), they became best sellers by offering quality construction and accurate, wide-range music reproduction — at Factory-Direct prices.

Ensemble

Our current *Ensemble* is an improved version of our original dual-subwoofer/satellite speaker system. It maintains the dual subwoofer design, which allows for maximum room placement flexibility. Placement of bass and high-frequency speakers in a room (and how those speakers interact with the room) has more influence on the sound quality of a music system than just about anything. *Ensemble's* ultra-slim subwoofers give



Ensemble

you more placement flexibility than any system we know of, and are 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."

New Woofer And Tonal Balance Controls.

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

1. *Ensemble* now uses a new 8" woofer with a very long "throw" for more linear cone excursion and more accurate bass. An integral heat sink provides improved power handling.

2. *Ensemble's* satellite speakers use the same speaker drivers and crossover as the original, but with new midrange and high frequency controls.

The midrange control lets you choose the same output in the key 800-1600 Hz octave as in the original, or you can emphasize it by 2 dB. *Ensemble* satellites have relatively less



output in this range to avoid the "boxy" sound of many speakers. This results in an "open" sound on large-scale

symphonic works. For small-scaled music, the higher

output position proves a "warmer" sound. A three-position high frequency control can subtly increase the system's "airiness," or reduce any tendency towards "edginess."

We believe our *Ensemble* system competes head-on with speakers selling for hundreds more. Available with black-laminate subwoofers for \$629⁹⁹, or with vinyl-clad subwoofers for \$549⁹⁹.

Ensemble II

Ensemble II is an improved version of our best-selling system. It's more affordable than *Ensemble* because it uses one cabinet for both subwoofer speakers. *Ensemble II* maintains the tonal balance, frequency range, power handling and construction quality of the original. But its satellite speakers use the same new tonal balance controls as *Ensemble's*.

Ensemble II also has a new flared subwoofer port. The subwoofer cabinet encloses two 6 1/2" long throw woofers mounted in a sealed "acoustic suspension" chamber. They project into a second chamber fitted with the flared port, which provides smoother air flow, eliminating extraneous noise on strong bass notes.

We think *Ensemble II* outperforms other speakers in its category, including well-known models for about twice the price. \$439⁹⁹.

Ensemble III

Ensemble III is our most compact, most affordable subwoofer/satellite speaker system. Its satellite speakers are only 4 1/2" x 6 1/2" x 3" and its subwoofer is 8" x 8" x 15". Compared to *Ensemble II*, *Ensemble III* gives up a little in power handling, low bass range, and efficiency. Unlike the "cube" satellite speakers you'll find in most similarly priced systems, *Ensemble III's* satellites are two-way speakers. *Ensemble III's* 6 1/2" woofer uses two voice coils in a cabinet with a flared port for smooth air flow.



Ensemble III

With most recordings *Ensemble III* will sound virtually identical to *Ensemble II*. It simply won't play as loud. Its construction quality is normally found only in much more expensive speakers. Price, including, Hook-Up Guide and Dolby Surround Guide, is only \$329⁹⁹.

We Eliminate The Risks.

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extra. But if you live away from an urban area, the phone charges can be higher than the connection costs. The commercial services and the Internet providers will furnish software when you subscribe. For a good introduction to the complexities of the Internet, I recommend *The Internet Starter Kit* by Adam Engst (Hayden Books), which comes in both Windows and Macintosh editions and includes a disk of Internet-connection software.

What You Get

Here's a sampling of online music offerings (“www” refers to the Web):

Alternative music gets exposure on the Web through the Internet Underground Music Archive (www.iuima.com). More than 500 acts have a page with a picture, descriptive text, and at least one music selection. Typically, music is in the form of either a 30-second excerpt or a full song. To listen, you simply click on an icon and wait. A 30-second excerpt of compressed 8-bit monaural audio takes 2 to 4 minutes to copy to your computer's hard drive and will produce hissy but usable sound, a few notches below the quality of AM radio. Often you can choose stereo or 16-bit sound for full CD quality (provided your computer can process 16-bit stereo), but be prepared to wait 15 minutes to half an hour, or longer, before you hear anything. The transfer time for any service depends on the overall data traffic and gateways, the quality of your local phone line, and your modem speed and computer configuration.

What makes alternative music on the Internet so appealing is that you choose what you want to listen to rather than being limited to what a big record company or record store thinks you want to hear, and you can check out new recordings before you buy. If a group has a CD or cassette available, you can order it and even find out how to book the band for your club. Of course, not all the music deserves a wide hearing, but the next act is only a click away. Big record companies, in their Web pages and on the commercial online services, usually offer photos, tour schedules, and music samples, often from forthcoming albums.

Forums, whether offered by a service or an Internet “newsgroup,” may incorporate music discussions in the form of messages posted on an electronic bulletin board. Forums range from broad topics (rock-and-roll or jazz) to specific composers (Stephen

Sondheim). Popular forums may grow by several hundred messages a day, others by only a few a week. Most forums are not moderated: that is, no one edits the messages or checks them for accuracy. Such raw information runs the gamut from the absorbing to the silly. Strongly worded arguments and insults (“flaming”) are common, in part because the various participants never see each other. With rare exceptions, forums contain only text without graphics or sound.

Several magazines have set up online sites. STEREO REVIEW, for example, is on AOL (keyword: stereo), with highlights from recent issues, reviews, and a forum. Dozens of small-scale electronic music publications (“e-zines”) have also popped up on the Internet and the commercial services. *Addicted to Noise* (www.addict.com/ATN) is billed as the Internet's first rock-and-roll magazine, offering celebrity interviews, a daily “Music News of the World” column, and a CD ordering service.

RealAudio is an ambitious project that turns the Internet into an audio feed—a private radio station (www.realaudio.com). You can select from many audio programs. Missed a report from yesterday's *All Things Considered*? Click on the NPR (National Public Radio) button, browse the topics covered in the past week, click, and listen. Again, the 8-bit sound is poorer than that of AM radio but is nevertheless adequate for speech; the standard modems available today simply cannot deliver real-time music with listenable quality.

Where It's Going

Better-quality audio feeds and faster online response times require faster telecommunications on many different levels. On the last leg, from your computer to the phone network, ISDN (Integrated Services Digital Network) phone lines support 64- or 128-kilobit-per-second connections, two to four times faster than the fastest modems. Although an ISDN line can't support a high-quality audio feed, it can support a modest-quality real-time video feed.

In the future, when fiber-optic cables are universal, a 1.5-megabit-per-second phone line will be able to deliver CD-quality audio and pretty decent real-time video. You'll be able to select and mix music to your own tastes—provided, of course, that the problems of copyright law and fair compensation can be solved. □

In The Mid '70s We Created Home Theater. Now We've Created A New Way To Buy It.



The people who work at Cambridge SoundWorks - including our cofounder Henry Kloss (who also founded AR, KLH and Advent) - have been involved with the concept of home theater from the beginning. In 1969 (years before VCRs and cable TV), Henry Kloss founded Advent, the company that introduced the first home theater audio/video systems - complete with big-screen TVs and digital surround sound. We have had an ongoing relationship with the people at Dolby Laboratories, creators of Dolby Surround Sound, since Henry Kloss introduced the *first* consumer products with Dolby noise reduction over 20 years ago. And now at Cambridge SoundWorks we believe we have set a new price-to-performance standard for home theater components.

Because we sell carefully matched and tested home theater speaker systems Factory-Direct, you can save hundreds of dollars. We believe the products on these pages represent the country's best values in high performance home theater components. Audio critics, and thousands of satisfied customers, agree. *Stereo Review* said, "Cambridge SoundWorks manufactures loudspeakers that provide exceptional sound quality at affordable prices." *Audio* suggested that we may have "the best value in the world."

Center Channel Speakers

Cambridge SoundWorks manufactures three speakers for use as center channel speakers in Dolby Pro Logic home theater systems. All three are magnetically shielded so they can be placed near a TV or computer monitor. *Model Ten-A* is a small, affordable two-way speaker. \$79⁹⁹. *Center Channel* is essentially identical to a Cambridge SoundWorks



Ensemble satellite (but with magnetic shielding). \$149⁹⁹. *Center Channel Plus* uses an ultra-low, ultra-wide design that is ideal for placement above (or, with optional support stand, below) a TV monitor. \$219⁹⁹.

Surround Speakers

Cambridge SoundWorks makes two "dipole radiator" surround sound speakers. Dolby Laboratories recommends dipole radiator speakers for use as surround speakers. *The*



Surround has a very high power handling capacity and is often selected for "high end" surround sound systems. *Audio*, describing a system that included *The Surround* said,

"In many ways the surround sensation was every bit as good as far more expensive installations." \$399⁹⁹ pr. The smaller *The Surround II* is arguably the country's best value in a dipole radiator speaker. \$249⁹⁹ pr.

Powered Subwoofers

The original *Powered Subwoofer* by Cambridge SoundWorks consists of a heavy-duty 12" woofer housed in an acoustic suspension cabinet with a 140-watt amplifier and a



built-in electronic crossover. *Stereo Review* said it provides "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." \$699⁹⁹.

Our *Slave Subwoofer* uses the same woofer driver and cabinet, but does not include the amplifier or crossover. It can only be used in conjunction with the *Powered Subwoofer*. \$299⁹⁹. The new *Powered Subwoofer II* uses a 120-watt amplifier with an 8" woofer. \$399⁹⁹.

Home Theater Speaker Systems

We have assembled a number of home theater speaker systems that consist of center

channel, surround and main stereo speakers. The combination we show here is our best seller. It includes our critically acclaimed *Ensemble* subwoofer satellite speaker system (with dual subwoofers), our *Center Channel Plus* and a pair of our best surround speakers, *The Surround*. You could spend hundreds more than its \$1,167⁹⁹ price without improving performance.

For information on other home theater speaker systems - or on any of the products we



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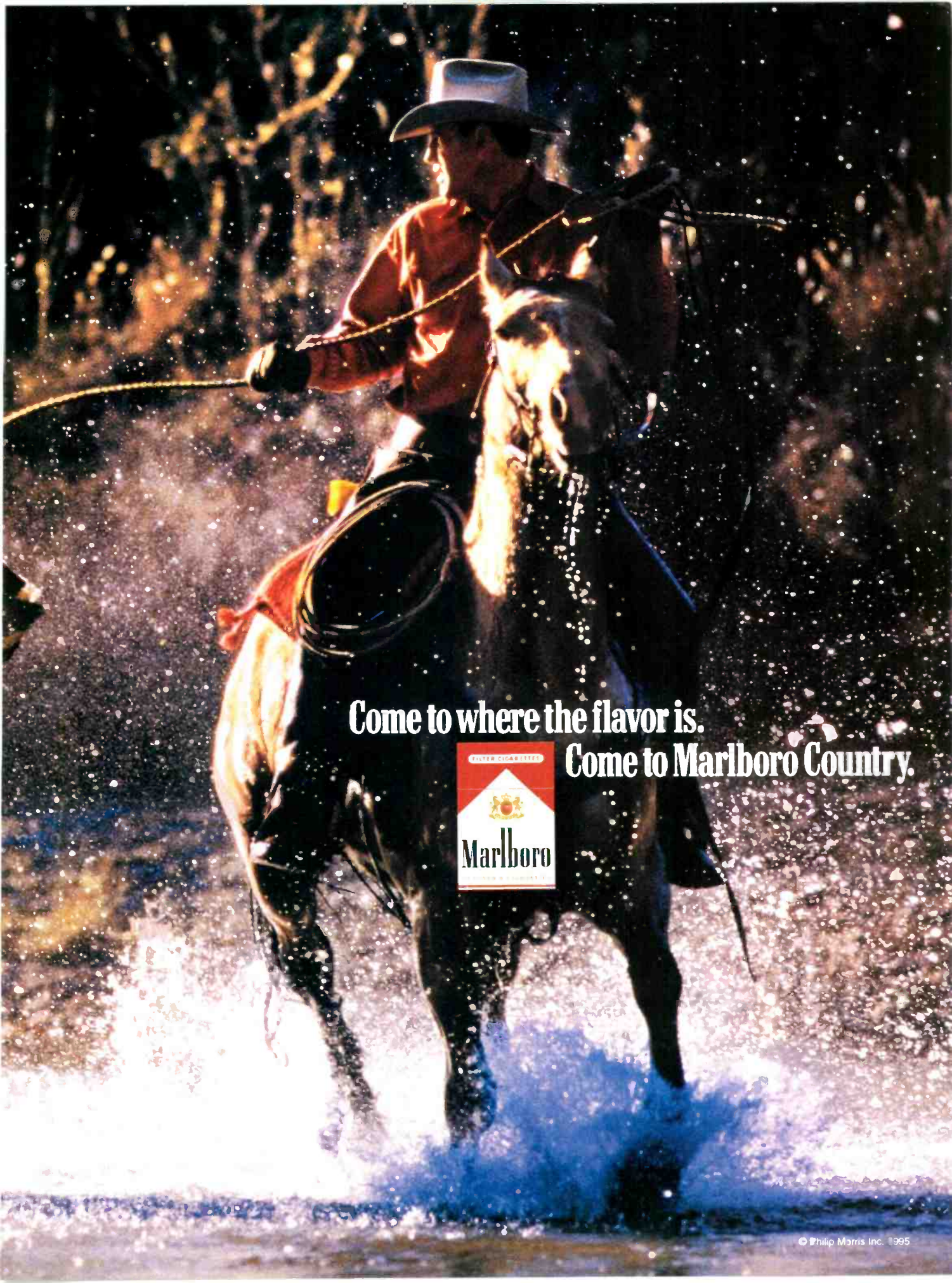


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AUDIO Q & A

BY IAN G. MASTERS

Center-Channel Hookup

Q My center speaker can be biwired or bi-amplified, and my power amplifier is a six-channel model that can be bridged to operate in three-channel, four-channel, or five-channel mode. My three front speakers are identical. So in hooking up the center speaker, is it sonically desirable to bridge the amplifier and connect the speaker straight? Or should I bridge the amp and biwire the speaker? Or biamplify but not bridge?

JOHN A. STANLEY
Mill Valley, CA

A As a general rule, you should treat all three front channels the same, especially if the speakers are identical, as they are in your case. You don't have enough channels of power either to bridge or to biamplify all three (unless you're willing to add yet another amplifier for the surround channels, in which case you could do either), so I sug-

gest skipping all of the options you mention and simply connecting each speaker to one amplifier channel. The sixth channel could be used to power a passive subwoofer if you find that the system needs a little extra oomph. As for biwiring, some swear by it and some pooh-poooh its effects — try it out and see whether you hear an improvement.

Noisy Equalizer

Q My graphic equalizer contains a spectrum analyzer and is connected between the pre-out and main-in jacks of my integrated amplifier. As soon as the equalizer is turned on, even without a signal, a noticeable hiss appears in the speakers. Also, the analyzer's display varies with the volume I set for the amplifier. When I connected the equalizer through a tape-monitor loop, the hiss occurred only at very high volume levels, and the analyzer's display was not

ted to volume. Why the differences, and which configuration is correct?

TYLER HENNINGS
Macomb, IL

A In an integrated amplifier, all the control functions, including overall level, are done at the preamp stage — that is, prior to the pre-out jacks. The power amplifier takes whatever is fed to its main-in jacks and applies its full gain to it. Thus the small amount of hiss produced by your equalizer is being fully amplified, whereas if it were connected earlier in the chain it would usually first be attenuated somewhat by the volume control. Similarly, since the pre-out jacks are after the preamp-level control, the spectrum-analyzer display on your equalizer will show overall level changes.

The line levels used throughout most systems would produce uncomfortably high sound levels if given the full gain of the am-

DOLBY SURROUND
AC-3 PRO LOGIC

THX



plifier, so the job of the preamp-level control is to cut back the level to a reasonable point. If your equalizer is in the chain before the level control, as it is when connected to a tape-monitor loop, the attenuation also reduces its internal noise, and the analyzer's reading is independent of the level setting or any changes in it. This is usually the best way to set things up; most equalizers let you compensate for the loss of a tape-monitor loop by incorporating an extra one.

Radio Rationale

Q *I don't understand how a radio signal of a single frequency can carry a separate frequency range. If a particular radio station has a fixed frequency, such as 102.1 MHz or 1030 kHz, how can it also contain the varying frequencies of a piece of music?*

PAUL LIPSCOMB
Lansing, MI

A It's by a process called modulation. An AM transmitter is fed an electrical signal that alternates at a fixed, very high frequency such as 1,030 kHz. Because of the nature of high-frequency electricity, the signal radiates outward from the transmitter tower until it reaches your antenna, in which it induces a tiny current of the same frequency. A tuned circuit in your radio detects the presence of this signal and produces a voltage of a certain value, depending on how strong the signal is. Imagine someone at the radio station gradually turning the level of the broadcast signal up and down by means of a manual level control; the voltage of the induced signal in your radio would rise and fall in step with the broadcast signal. If, instead of someone turning a knob, the varying level of an audio signal were used to control the carrier's level, that audio signal would appear in your radio and could be amplified.

The system works because the carrier frequency is many times greater than the highest frequency in the audio signal (the lowest AM carrier is 540 kHz, and the highest AM audio frequency is 10 kHz, so there are at least fifty cycles of the carrier for every cycle of the audio). Alternatively, the amplitude — the overall level of the carrier — can remain fixed while its frequency is varied around a nominal center frequency, which is how FM radio works. This frequency-modulation technique results in generally lower noise.

Choosing a Cartridge

Q *I'm rebuilding my system and want to replace certain parts of it, specifically the phono cartridge on my manual turntable. I have more than 2,000 albums and about 100 CD's, so I listen to vinyl recordings about 95 percent of the time. With that in*

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DENON

The First Home is Digital Home Theater

mind, how should I go about deciding which cartridge to buy?

PETER D'ARPA
New Rochelle, NY

A Traditionally, choosing a phono cartridge has been about as personal as choosing speakers, and there are lots of opinions and controversies out there. Generally, however, the sonic differences between good cartridges have narrowed, and top models from the main brands are all reliable and offer excellent sound. Listen to a few and pick one whose sound you like.

But as vinyl recedes into audio's history, we can expect the amount of equipment available to play it to continue shrinking, and that suggests some strategies you should use to make sure you can play your LP's indefinitely. The first is not to scrimp; this may be the last cartridge you'll ever buy (or be able to), so it's worth the money to make sure it'll last. Also, it may be unwise to opt for a moving-coil (MC) model, regardless of what the fans of that design may say. Not only are MC cartridges usually more expensive than their moving-magnet equivalents, but they almost never have a replaceable stylus. Since the stylus is the part that's most likely to wear out, it makes sense to insure you can replace it in the future (and equal sense to buy at least one replacement now, while you can). It may also be that you don't need a new cartridge at all, just a new stylus.

Watts, Decibels, and Levels

Q How much of an increase in amplifier power does it take to make a sound twice as loud? How many decibels represent a doubling of loudness? And if I have a 100-watt amplifier and want to play music at twice the volume, what size amplifier will I need?

TODD R. URMANIC
Elyria, OH

A If you double the output power of an amplifier, that's a gain of 3 dB, which is about what's necessary to achieve a clearly audible increase in volume. To achieve a subjective doubling of the volume, you need an increase of about 10 dB, which means about ten times the power output. As for what size amplifier you need to double the volume, that's impossible to say. You may be able to achieve that level with the amp you have, depending on where you typically set the volume control.

Amplifiers only rarely hit their rated output. Depending on the sensitivity of your speakers, the nature of the music, and a number of other factors, it may well be that your 100-watt amplifier is actually putting out only 1 or 2 watts most of the time. In that case you could get twice the subjective level just by turning up the volume control.

DAT for Da Road

Q I'm planning to buy a DAT deck for recording my friends' CD's and for live recording. I think the extra cost will be worth it to get perfect copies and for DAT's CD-like track access. But most of my listen-

ing will be in my car, and I haven't been able to find any car DAT decks. Are there any?

PETER McGRANE
Binghamton, NY

A First, be aware that what you are planning is illegal. The law says you can make a digital copy of your own CD's for use in your car, but not of your friends' CD's. Technically, however, you should have no difficulty connecting a portable DAT deck to any car stereo system that has line inputs (car DAT decks were available from a few car stereo manufacturers and at least one major car maker several years ago, but to the best of my knowledge they've all since disappeared from the market).

A portable DAT machine could be used for all three functions you mention: copying discs, making recordings in the field, and listening in the car. Except for the most critical purposes, however, I think DAT might be overkill. A MiniDisc recorder will let you do the same things with greater editing flexibility and much faster track access (DAT's track access, by the way, is five or six times slower than CD's). I doubt that you'd be able to hear much, if any degradation of the sound compared with the original — especially in a car.

Sibilant Center

Q When I play my hi-fi VCR through my surround decoder, "s" sounds come across with an annoying high-pitched hiss. This doesn't happen when I'm listening to stereo broadcasts. Is there something I can do to eliminate the problem?

STEVE FORTUNATO
Lyndhurst, OH

A It's hard to know exactly what's going on here without more details on your system, but it sounds like it could be a characteristic of your center speaker, which may produce some high-frequency resonances or coloration. The effect may be noticeable because the center speaker's output isn't balanced with that of the main speakers, and it may be more apparent on tapes because hi-fi videocassettes often have more high-frequency energy than broadcast programs.

A few surround-sound decoders and Pro Logic receivers incorporate center-channel equalization to deal with such problems. If your decoder has such controls, experiment with them. Or it may simply be a matter of backing off a bit on the treble control for the whole system; that will affect all the channels, but the removal of the sibilance from the center might well outweigh any dulling of the main channels. I have also occasionally dealt with similar problems by tilting the speaker up or down so that the main listening position is slightly off-axis, but that depends entirely on the dispersion characteristics of your center speaker.

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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GA: Audio Warehouse; Savannah; Ken's Stereo Junction; Macon; Merrit TV; Columbus; Stereo Connections; Valdosta; Stereo Festival; Atlanta; Stereo Shop; Martinez; Stereo Video Systems; Marietta.
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MD: Audio Buys; Annapolis; Bethesda; Laurel; Rockville; Waldorf; Gramophone; Bal.; Elbert City; Soundscape; Baltimore.
ME: Cookin'; Portland; Sound Source; Bangor.
MI: Pecar's; Detroit; Troy; Classical Jazz; Holland; Classic Stereo; Kalamazoo; Grand Rapids; Front Row A/V; Flint; Future Sound; Ypsilanti; Court St. Listening Room; Midland; Saginaw.
MN: Audio Designs; Minnetonka; Audio King; Minneapolis & Suburbs; Rochester; St. Cloud; Audio Perfection; Minneapolis.
MO: Independence A/V; Indep. Sound Center; St. Louis.
MS: McDaniel TV; Hattiesburg; Players A/V; Ridgeland.
MT: Car & Home Stereo Center; Billings; Rocky Mountain; HI Fi; Great Falls.
NC: Audio Video Systems; Charlotte; Audio Visions; Wilmington; Now Audio Video; Durham; Greensboro; Raleigh; Winston Salem; Audio Lab; Wilmington; Tri City Elect.; Conover.
NE: Custom Electronics; Omaha; Lincoln.
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BY KEN C. POHLMANN

A Call to Arms!

Back in the Seventies, when the world was a better place and Richard Nixon was President, audiophiles and videophiles were two very different groups of people. We audiophiles lovingly washed and caressed our beloved LP records, sat equidistant between a pair of loudspeakers, and closed our eyes in moments of supreme ecstacy. Videophiles, a rather suspect lot in my book, sat directly in front of their glowing picture tubes, erected huge satellite dishes in their backyards (usually in violation of local ordinances), and always kept their eyes open. We audiophiles had nothing to look at except the liner notes and were damn proud of it. But with the advent of home theater came reconciliation between the two groups, and our numbers dwindled. Some foolish people thought they could have it both ways.

Old habits die hard, and more than a little jealousy lingers. A lot of videophiles were peeved when the CD came along. "If audiophiles can step into the digital age, why can't we?" they whined. Now those damn videophiles are smiling because video technology is on the cusp of radical improvement. Consumer digital videotape is ready for launch, and, more significant, the digital videodisc (DVD) is tantalizingly close. Two big alliances of corporate juggernauts have proposed systems that will allow full-length movies to be digitally coded on a single 5-inch disc. Videophiles, who often wear sweaters and ties, are particularly smug because the object of their greatest jealousy, the compact disc, will serve as the basis for their new toy.

The Sony/Philips Multimedia CD (MMCD), for example, provides an elevenfold increase in capacity over a regular CD, from 680 megabytes (MB) to 7.4 gigabytes (GB); that translates into 270 minutes of audio/video playing time. A model of cool optical storage technology, the disc has two data layers on one side; the reading laser focuses on one layer at a time, providing continuous playback by reading outward on one layer, then inward on the other. Using the MPEG-2 data-reduction audio/video coding algorithm, the system spins the disc at variable speeds, adjusting data rates according to need. At a reference speed of 4

meters per second, the output data rate is 11.2 million bits per second (bps); in comparison, the CD rate of 1.41 million bps seems sluggish. Picture quality is said to equal or surpass that produced by the best analog laserdisc, and audio will be coded in two-channel stereo, 5.1-channel surround sound, or both.

The SD-DVD (Super Density Digital Video Disc) Alliance, to which Toshiba, Time Warner, Matsushita, RCA, and a number of other hardware and software manufacturers belong, has proposed several DVD variations, including a dual-layer disc with an even greater data capacity of 9 GB and two double-sided discs that hold 5 GB and 9 GB per side.

Understandably, we audiophiles, even those of us who have admittedly dabbled in home theater, are not happy about this development. DVD will give videophiles clear technological superiority over us. In a year or two, they will have a disc that delivers more than 4 hours of surround sound, not to mention a digital picture,

We audiophiles demand a shot at the digital videodisc — but one without video. We want the Ultimate CD.

while we are stuck with the CD's measly hour or so of ordinary stereo. We don't think that's fair.

In fact, it isn't fair at all. Across the land, we audiophiles are rising up and throwing aside our jewel boxes. We demand a piece of the action! We want a shot at the digital videodisc — but one without video. We want all of those 7,400,000,000 bytes of storage capacity for audio, and audio alone. We want the Ultimate Compact Disc, the UCD.

For starters, we don't think a 44.1-kHz sampling rate is good enough. Although only a minuscule amount of musical information lies above a half-sampling frequency of 22.05 kHz, and an even more minuscule number of us can hear above that frequency, we demand a doubled sampling frequency of 88.2 kHz.

Furthermore, we don't like 16-bit quantization, and, if the truth be told, we never really did. Admittedly, 16-bit quantization is impressive, particularly if you express it in understandable terms: If sheets of typing paper were stacked to a height of 22 feet, a single sheet of paper would represent one quantization level in a 16-bit system. That's great, but in a 24-bit system, the stack would tower 5.592 feet in height — over a mile high. If a single page was removed, the least significant bit would change from 1 to 0. Put another way, if the width of the North American continent was measured with 24-bit accuracy, the measurement would be accurate to within 9 inches. We believe that we need that kind of resolution to code audio signals. Besides, many digital video recorders use 8-bit coding for each of the three color signals, and if they get 24 bits, we should get 24 bits too.

So there it is. With a sampling frequency of 88.2 kHz and quantization of 24 bits, more than 4 hours of stereo could be stored on one UCD. But we're not through making demands. We are audiophiles, after all, and we're certainly not going to admit that we like video or even home theater, but we do kind of like the idea of 5.1 audio channels. Therefore, we want the option of storing 5.1 audio on the UCD; we figure that with 24-bit main channels and data-reduced ambience channels, you could fit 3 hours onto a disc.

Listen here, you manufacturers: While you're at it, we'd like the UCD to be erasable, too. What? You say it can't be done? *Please*. We know full well that Sony already sells a professional magneto-optical disc recorder that records 80 minutes of 20-bit, 44.1-kHz digital audio data on a 5¼-inch disc storing 1.3 GB. When 24-bit converters become available, the recorder can be configured for 24-bit recording with 65 minutes of recording time. Sure, it sells for \$40,000, but with greater volume, we think you could bring it down to \$500.

We promise that development of the Ultimate Compact Disc will make us happy, and that audiophiles everywhere will not riot in the streets when you introduce the digital videodisc for videophiles. Of course, if you try to introduce some kind of 3-D television or something, you'll be hearing from us. We're already working on our demands describing the Super Ultimate Compact Disc. The one that will sound as good as our old LP's. □

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TECHNICAL TALK

BY JULIAN HIRSCH

How Much Fidelity Is Enough?

That question reminds me of the story about Abraham Lincoln, who responded to comments about the length of his legs by pointing out that they were just long enough to reach the ground. Presumably anyone's music system should be good enough to satisfy his personal taste in sound. After all, home music reproduction at its best is a long way from perfect. For me, the original sound is the reference to which any reproduced sound ultimately must be compared. A perfect reproduction, by my standards, would be one that could not be distinguished from the live performance.

Paradoxically, although I cannot conceive of orchestral music being reproduced in one's home so faithfully as to be indistinguishable from the original performance, I *can* imagine a situation in which a reproduction might be "better" than the original. A high-quality recording in which musical gaffes, extraneous sounds (coughing and so forth), or other audible problems have been removed by editing or some form of digital surgery that leaves the program intact might well be viewed as an improvement on literal accuracy, although I imagine some purists would protest *any* modification of the original. In general, however, we are pretty much limited to hearing the sounds that have been captured by the recording microphones, as they have been recorded and edited, and as they have been further modified in the playback process.

As most of you know, the result of playing almost any recorded program in your home, while it can be highly satisfying and enjoyable, is very different from anything that might have been heard during the original performance. When was the last time you closed your eyes while listening to a high-quality music recording through any audio system and could not tell whether it was live or recorded? It is probably with the spoken word and chamber music that we can come closest to achieving truly "perfect" reproduction in the home (assuming reasonably good playback equipment and source recordings), simply because their normal acous-

tic environment and dynamic range are closest to those that are typically encountered at home.

In spite of these limitations, there is a never-ending parade of audio components that are claimed (or at least implied) to bring the concert-hall experience into your home. All of which brings us to the question, how close to perfection can your home music system be? How "perfect" *should* it be?

In all human activities, there is a finite limit to the achievable approach to perfection. In the case of audio, mechanical disc recording and playback (and analog tape recording, not markedly superior to disc in its sound quality) thrived for almost a century before being made obsolete by digital recording technology, which has been with us for a couple of decades now. Most of the current emphasis in music recording and reproduction technology for the consumer market seems to be in the direction of home the-

I have long espoused the idea that the loudspeaker is more important than all other parts of a music system combined.

ater and multichannel sound. Without slighting the impressive achievements that have been made in those areas, I wonder if any corresponding gains have been achieved in the basic reproduction of *music* in the home.

I have long espoused the idea (heretical in the eyes of some) that the loudspeaker is more important than all other parts of a music system combined, since it alone produces the actual sound that we hear. But it is also inherently imperfect and inferior to digital software and hardware in its accuracy and precision.

Its very imperfection, in my view, is one of the loudspeaker's greatest appeals. Because of the unavoidable interaction between a speaker and the surrounding

room and furnishings, and the speaker's inherent audio characteristics, there can be as much individuality (and variability) in the design and installation of a speaker system as in the creation of a work of art or a skilled chef's prized dish.

In STEREO REVIEW's 1995 *Stereo Buyer's Guide*, the space devoted to speaker listings is approximately equal to that for all other components combined. Although I did not attempt an actual count, it is clear that the marketplace figures reflect both the diversity of the loudspeaker industry and the prime importance of the loudspeaker to the hi-fi world. With few, if any, of the other audio system components do we find the range of size, price, and performance that exists among loudspeakers (from less than \$100 up to \$100,000, from small and light enough to hold in your hand to weighing a couple of hundred pounds and barely able to fit into a typical room). Despite what you might read or be told, the sonic differences between amplifiers and most other primarily electronic components are usually relatively slight (if neither is driven beyond its linear range, a \$100 amplifier does not necessarily sound much different from a \$10,000 amplifier). On the other hand, in side-by-side comparisons between speakers, it is almost axiomatic that no two models will sound exactly alike. The distinctions range from very subtle tonal or imaging characteristics to glaringly different colorations.

My advice is to avoid a serious mismatch between your amplifier and your speakers. I am not referring to impedance characteristics, which except in unusual cases have a relatively minor effect on sound, but rather to an overall quality or price imbalance, such as an amplifier that costs several times as much as your speakers. The reverse imbalance — speakers that cost several times what you spent for the amplifier — is not such a bad idea, provided the amplifier (or receiver) is powerful enough to get the most out of the speakers. A large speaker does not necessarily *require* more power than a smaller one, but it is more likely to profit from having it available when needed.

So to answer the question I posed initially, your system should be designed to satisfy your listening tastes and to fit within your budget. In apportioning the system budget, favor the speakers. You'll appreciate the results. □



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BOOK & TELING

Yamaha RX-V590 Audio/Video Receiver

DAVID RANADA • TECHNICAL EDITOR

Yamaha's RX-V590 sits close to the middle of the company's A/V receiver lineup. Its power ratings, 75 watts each for the three front channels and 25 watts for the two surround channels, are typical of models in the RX-V590's price range. What's unusual are the receiver's multiple digital signal-processing (DSP) functions for ambience enhancement of both soundtracks and music recordings.

Called Cinema DSP, the circuitry is a descendent of Yamaha's highly regarded concert-hall-simulating digital ambience enhancement. The system emits from the front and surround speakers numerous digitally derived "echoes" or, more accurately, "reflections" that are different in each speaker and vary in spacing and intensity depending on what kind of performance space is being simulated. Eight processing modes are provided, including standard, unmodified Dolby Pro Logic with just the usual single delay applied to the surround channel. Dolby Pro Logic Enhanced is said to

simulate "the multi-surround speaker systems of a 35mm film theater." Concert Video is meant for music videos as well as operas. The remaining modes are Mono Movie, Stadium, Disco, Rock Concert, and Concert Hall. As usual, such labeling should be used only as a guide to the size of the performance space being simulated. It's to your advantage to experiment with matching the processing mode to your music.

Both the front panel and the remote carry controls for adjusting the relative levels of the center and surround speakers — a critical alignment necessary for the most realistic spatial enhancement as well as for the proper re-

production of soundtracks — and for turning on the built-in level-adjustment test signal. You can also adjust the surround-output delay time, which sets the period between the emission of the main front-speaker sound and the first emission of the digitally processed sound from the main front and surround speakers; no synthetic reflections are added to the center channel in any of the modes.

Other front-panel facilities include buttons controlling the forty-preset AM/FM tuner; switching for two sets of main speakers; a quarter-inch headphone output; bass, treble, and balance controls; and an A/V input for temporary hookup of camcorders or video games. Signal sources selected by a bank of eight buttons to the right of the display area include four that are audio-only (tape monitor, tuner, CD, phono) and four that are audio/video (phono aux, VCR 1 and 2, and LD/TV). All video connections carry composite-video signals; there are no S-video facilities. The remote control is a universal programmable model that includes the only access to the receiver's sleep timer, which can be set in half-hour increments up to 2 hours. There is no mute control anywhere, but that function can be performed simply by switching to an unused input.

Hookup posed no special problems, the back panel being well laid out and equipped. The main speaker outputs

DIMENSIONS: 17 $\frac{1}{8}$ inches wide, 5 $\frac{3}{4}$ inches high, 15 $\frac{1}{4}$ inches deep

WEIGHT: 22 pounds

PRICE: \$549

MANUFACTURER: Yamaha Electronics Corp., Dept. SR, 6660 Orangethorpe Ave., Buena Park, CA 90620



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 The Cranberries: No Need To Argue (Island) 06258
 Sarah McLachlan: Fumbling Towards Ecstasy (Arista) 02536
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 Bonnie Raitt: Longing In Their Hearts (Capitol) 02742
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 Kiri Te Kanawa: Kiri Sings Porter (Angel) 02958
 Frank Sinatra: Duets (Capitol) 03039
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 Anita Baker: Rhythm Of Love (Elektra) 05980
 Nanci Griffith: Flyer (Elektra) 05982
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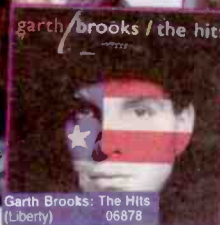
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Prince: The Hits 1 (WB/Paisley Park) 02228 #

Lena Horne: Stormy Weather: The Legendary Lena (1941-1958) (RCA) 01784

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Huey Lewis & The News: Four Chords & Several Years Ago (Elektra) 03274

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The Infamous Mobb Deep (Liberly Records) 08606 #

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Louis Armstrong: All Time Greatest Hits (MCA) 03399

Ella Fitzgerald: The Best Of The Songbooks: The Ballads (Verve) 05713

Joshua Redman: Mood Swing (Warner Bros.) 05845

The Rippingtons: Sahara (GRP) 06008

Najee: Share My World (EMI) 06141

The Manhattan Transfer: Tonin' (Atlantic) 06175

Acoustic Alchemy: Against The Grain (GRP) 06270

The Best Of David Sanborn (Reprise) 06274

Jeff Lorber: West Side Stories (Verve) 06330

GRP All-Star Big Band: All Blues (GRP) 06846

Christian McBride: Gettin' To It (Verve) 06863

George Duke: Illusions (Warner Bros.) 06926

Tom Scott: Night Creatures (GRP) 06928

Pat Metheny Group: We Live Here (Geffen) 06938

Spyro Gyra: Love & Other Obsessions (GRP) 08224

Yellowjackets: Collection (GRP) 08225

Bella Fleck: Tales From The Acoustic Planet (Warner Bros.) 08348

Larry Coryell: I'll Be Over You (CTI) 08835

The Best Of Miles Davis: The Capitol Blue Note Years (Blue Note) 11000

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are binding posts that take dual or single banana plugs or stripped wires, while the center and surround speaker outputs are spring connectors. Connections for external sources are all phono connectors deployed horizontally across the bottom of the rear panel, with the video connections of A/V sources conveniently located directly above the corresponding audio jacks. Other rear-panel facilities include an F-connector FM antenna terminal, spring-connector AM antenna terminals, two switched AC convenience outlets, and a full set of line-level surround-decoder outputs, one of which is designated for subwoofer hookup.

Overall, the RX-V590's lab-test performance was considerably better than average, aided in no small measure by the ample output power, which remained strong even into 4-ohm loads. The FM tuner also produced uniformly good numbers. The only disappointing figures were AM frequency response, which was, as usual, dismal, and front left- and right-channel frequency response, which exhibited deviations at the extremes of the audio range caused by slight offsets in the tone-control circuits, something we're seeing more of nowadays than we would like to (or used to).

Although not affected by the tone controls, the center channel showed slightly more rolloff than the other front channels, whereas the surround channel's response fell more slowly above 7 kHz than usual. All the other Dolby Pro Logic figures represent very good performance, especially channel separation, which was better than we usually see from Pro Logic decoders that use analog circuits rather than the digital ones in the RX-V590. Impulse testing revealed that all the reflections for the non-Pro Logic DSP modes occur within, at most, a 400-millisecond "window" after the original sound; there is no sound recirculation or added reverberation.

With a single big exception, the receiver was easy to operate. I liked the separate-button access to each of the surround-sound modes, enabling rapid changes between them. I also liked the on/off button for the surround processing, again because it enabled swift comparison between processed and unprocessed sound. The remote is nicely laid out and especially well labeled for receiver-only operation; those who take advantage of its code-learning capabilities may get lost in the too-regular layout of the additional controls.

Now for the exception, which applies to all the surround modes except plain Dolby Pro Logic. The RX-V590 is the first Yamaha DSP product we have encountered to leave out what I consider an indispensable feature: the ability to reduce or remove the DSP-generated reflections from the front speakers. Although the added reflections may produce an effective showroom demonstration — if only by making the receiver sound obviously different from its competition — in our tests the digital echoes, depending on the mode selected, produced



changes in the frontal sound quality ranging from a slight hollowness to a dialogue-obscuring spaciness in Dolby Pro Logic Enhanced.

In previous Yamaha DSP products I've reviewed, there has always been a way to reduce or eliminate those effects, either by turning the frontal reflections down or even off (with a "front-effect" level control) or, better, by feeding them to separate front-ambience speakers placed apart from the main front left and right speakers so that the "reflections" and the main front-channel sound come from different directions. With the RX-V590, you are stuck with Yamaha's factory settings for the front-effect level, which I feel are too high. This is particularly disappointing because previous Yamaha components with DSP-based ambience enhancement (which the company pioneered) have consistently sounded more realistic than those of most of its competitors and have usually been easier to adjust for optimum performance as well.

On the other hand, how you respond to the sound of the processing will at

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least to some degree be a matter of taste, which means it is possible that you will find the RX-V590's ambience-enhancement modes more appealing and useful than I did. And few other receivers even try, much less succeed, to offer anything as sophisticated in this vein as the RX-V590, so you won't necessarily find competing models superior in the ways they handle modes other than Dolby Pro Logic. As for unenhanced Dolby Pro Logic, you can take heart in the fact that the RX-V590's implementation of that

most critical processing mode performed exceptionally well, decoding Dolby Surround soundtracks cleanly and accurately. And the RX-V590 has ample power reserves for all but the most insensitive speakers or the largest of listening rooms. The RX-V590 is likewise a worthy contender, for its price class, in terms of features and ease of operation. If the additional processing modes are very important to you, then, as usual with that sort of thing, listen before you buy and choose accordingly. □

MEASUREMENTS

AMPLIFIER SECTION

Except as noted, all data are for two-channel stereo operation

OUTPUT AT CLIPPING (at 1 kHz)
front left and right (8 ohms) 100 watts
front left and right (4 ohms) 150 watts
center (8 ohms) 120 watts
surround (8 ohms) 29 watts

CLIPPING HEADROOM (re rated output)
8 ohms 1.25 dB

DYNAMIC POWER (8 ohms) 120 watts

DYNAMIC HEADROOM (re rated output)
8 ohms 2.0 dB

DISTORTION AT RATED POWER
(75 watts, 1 kHz) 0.009%

SENSITIVITY (for 1-watt output into 8 ohms)
CD 18 mV
phono 0.3 mV

NOISE (re 1 watt, A-wtd)
CD -83.6 dB
phono -80 dB

PHONO-INPUT OVERLOAD
(1-kHz equivalent levels)
20 Hz 120 mV
1 kHz 116.5 mV
20 kHz 112 mV

PHONO-INPUT IMPEDANCE
..... 50,000 ohms in parallel with 175 pF

RIAA PHONO-EQUALIZATION ERROR
20 Hz to 20 kHz ±0.2 dB

FREQUENCY RESPONSE (tone controls centered)
..... 20 Hz to 20 kHz +0.4, -0.8 dB

TONE-CONTROL RANGE
100 Hz ±8 dB
10 kHz ±8 dB

TUNER SECTION

All data are for FM only except frequency response

SENSITIVITY (50-dB quieting)
mono 15 dBf
stereo 37 dBf

NOISE (at 65 dBf)
mono -79.2 dB
stereo -72.3 dB

DISTORTION (THD+N at 65 dBf)
mono 0.16%
stereo 0.47%

CAPTURE RATIO (at 65 dBf) 1.2 dB

AM REJECTION 70 dB

SELECTIVITY
alternate-channel 92 dB
adjacent-channel 7.8 dB

PILOT-CARRIER LEAKAGE
19-kHz -79 dB
38-kHz -76 dB

HUM (120 Hz) -82 dB

CHANNEL SEPARATION
100 Hz 36 dB
1 kHz 45 dB
10 kHz 42.5 dB

FREQUENCY RESPONSE
FM 20 Hz to 15 kHz +1.4, -0.35 dB
AM 28 to 2.3 kHz +1.5, -6 dB

DOLBY PRO LOGIC PERFORMANCE

FREQUENCY RESPONSE
(tone controls centered)
left, right 20 Hz to 20 kHz +0, -0.74 dB
center 20 Hz to 20 kHz +0, -1.04 dB
surround 51 Hz to 8 kHz +0, -3 dB

NOISE (re 1-watt output, A-wtd)
left, right -74.7 dB
center -79.7 dB
surround -71.5 dB

DISTORTION (THD+N, 1 kHz, 1-watt output)
left, right 0.043%
center 0.049%
surround 0.14%

SURROUND DECODER INPUT-OVERLOAD MARGINS (at 1 kHz)
left, right (re 2-volt input) 1.38 dB
center (re 1.414-volt input) 4.0 dB
surround (re 1.414-volt input) 1.25 dB

SURROUND-CHANNEL NOISE-REDUCTION CALIBRATION ERROR
re Dolby level (247.5 mV) 0 dB

CHANNEL SEPARATION (100 Hz to 7 kHz)
left output, right driven >43 dB
left output, center driven >43 dB
left output, surround driven >33 dB
center output, left driven >51 dB
center output, surround driven >52 dB
surround output, left driven >55 dB
surround output, center driven >50 dB

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JBL J820M Loudspeaker System

JULIAN HIRSCH • HIRSCH-HOUCK LABORATORIES

JBL says that its new J Series of loudspeakers has been designed to provide exceptionally accurate, uncolored, and balanced sound at affordable prices. The line consists of five "bookshelf" speakers and two larger "tower" models, plus a center-channel speaker specifically for home theater applications (the others are equally usable in conventional music systems or home theater).

The J820M falls in the middle of the line in size and price. It is a two-way system suitable for shelf or stand installation. Its 8-inch woofer, which has a polymer-fiber cone, operates in a vented enclosure. The crossover, at 3.5 kHz, is to a 14-millimeter (approximately 1/2-inch) titanium-dome tweeter. The rated system response, at the -6-dB points, is 50 Hz to 20 kHz. Sensitivity of the nominally 8-ohm system is specified as 90 dB, and it is recommended for use with amplifiers rated between 10 and 125 watts output.

The speaker's port opening is on its front panel, simplifying its installation

against a wall if desired. For listening and most measurements, however, we placed the speakers on 25-inch stands several feet from the room walls. The terminals, on the rear panel, are spring clips that accept stripped wire ends. Unlike most such connectors, they are 3/4 inch apart and would also accept dual banana-plug connectors (though not as easily as connectors designed for that purpose).

Beginning with this speaker, we have slightly modified the room-response measurement technique we have used for many years. Previously, a frequency-sweeping signal generator and a synchronized chart recorder

plotted the speaker's frequency response on graph paper. The purpose of this measurement was to establish the effective frequency response of a pair of speakers in a fixed "real-room" environment, under physical and acoustic conditions that are maintained as nearly identical as possible for all speakers tested. That process remains fundamentally unchanged, except that we now use our Audio Precision System One to generate the test signals and digitally process the output returned by the Bruel & Kjaer 4133 measurement microphone. By measuring the speakers' room response under identical conditions in the same environment with both types of instrumentation, we have established that the results from the new procedure are very similar to those obtained with the old, with the advantage that the new procedure is considerably faster and more convenient to perform.

The room-response curve for the JBL J820M speakers (the average of the left and right speakers' outputs, smoothed and corrected for the known high-frequency absorption characteristics of the room) was basically very similar for the two measurement methods. It was very flat, with relatively little response variation over most of the audio range (our averaging and smoothing process minimizes the effects of the unavoidable room standing-wave patterns). Since the smoothing function provided by the Audio Precision system is not identical to that of our former instrumentation, there were numerous minor differences between the results of the two tests, but their graphical characteristics were strikingly similar.

Essentially, the response curve had two relatively flat plateaus, each covering about half the spectrum. Between approximately 100 Hz and 1 kHz the smoothed output varied over a ± 1 -dB range. There was a distinct 4-dB drop between 1 and 1.5 kHz and a strikingly flat response (less than 1 dB overall variation) from 1.5 to 10 kHz. Applying the high-frequency room correction (which we have been using on all speaker measurements for about twenty-five years) extended the flat high-frequency response to 20 kHz. It was interesting (and gratifying) to find that our former measurement method produced the same basic curve shape as our new procedure, though with slightly more variation and departure from uniformity.

A close-miked woofer-response

DIMENSIONS: 10 inches wide, 19 1/4 inches high, 10 inches deep

WEIGHT: 18 pounds

FINISH: Black woodgrain

PRICE: \$300 a pair

MANUFACTURER: JBL, Dept. SR, 80 Crossways Park W., Woodbury, NY 11797

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measurement indicated maximum output at 135 Hz, falling by 6 dB at 60 Hz. The port radiation dominated at frequencies below about 90 Hz. Such a measurement is inherently less ambiguous than the room measurements, since it is essentially free of room interaction. Unfortunately, it is not always easy to splice such a bass curve to a room curve in a meaningful manner. Nevertheless, there was no doubt that the J820M easily met its response specification of 50 Hz to 20 kHz at the -6-dB points. The actual lower limit is hard to determine precisely because of room-boundary effects, but listening tests indicated that it was somewhere between 40 and 50 Hz. Overall, the J820M's composite measured response was admirably smooth and extended for a speaker of its size.

Quasi-anechoic MLS response measurements confirmed the impressive flatness of the speaker's output. The axial 2-meter response was flat within ± 3 dB from 300 Hz to 13 kHz, with a tweeter-resonance peak of 8 dB at 15 kHz. This measurement also showed a pronounced notch at 3.8 kHz, apparently due to the crossover (the notch did not appear in room measurements and was not audible).

The J820M's measured sensitivity with a 2.83-volt input was 93 dB sound-pressure level (SPL), somewhat higher than rated. At a constant input of 2 volts, equivalent to a 90-dB SPL output, distortion was between 0.7 and 1 percent from 100 Hz to 2 kHz. It rose at lower frequencies, reaching 3.7 percent at the rated low-frequency limit of 50 Hz. Below that point the

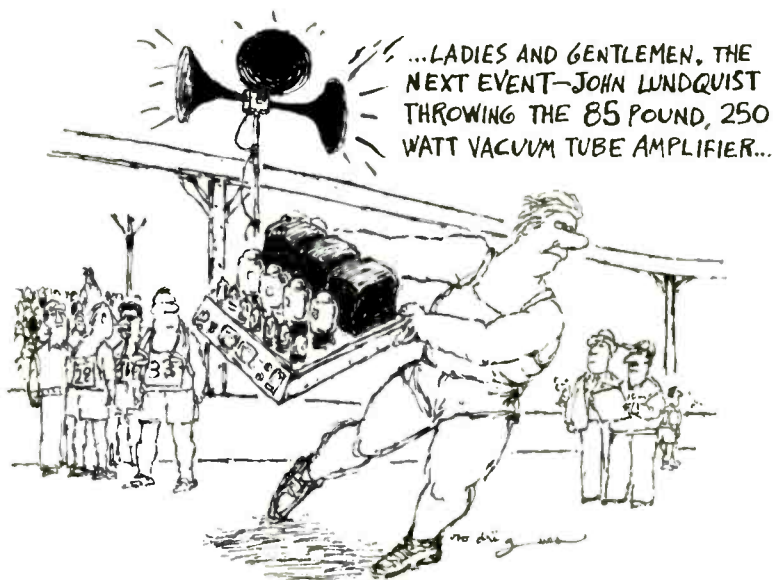
output dropped off fairly steeply, although the distortion did not exceed 10 percent down to 20 Hz.

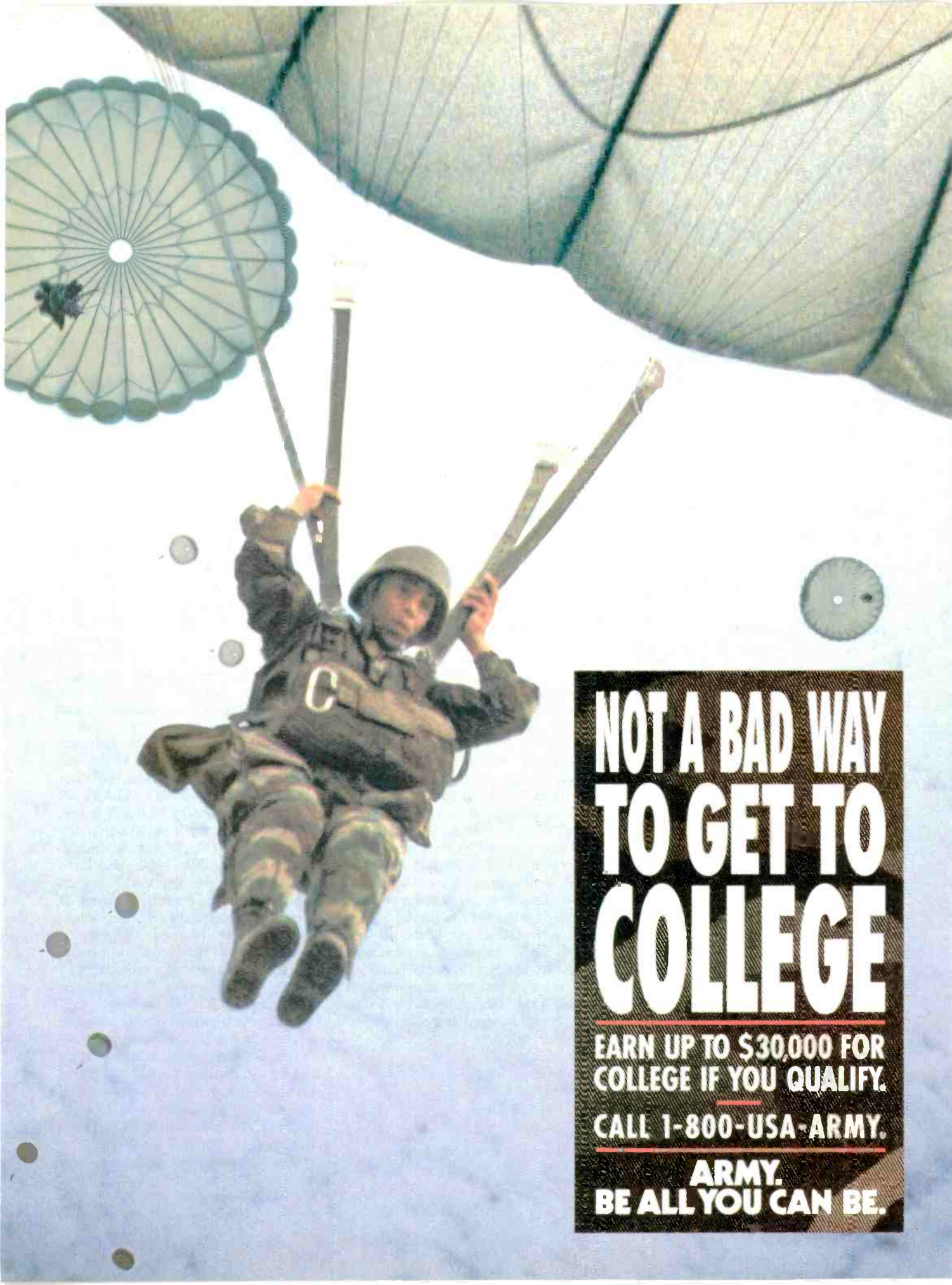
Those results suggested that at reasonable average levels, driving the J820M moderately hard at low-bass frequencies would not cause the sound to muddy up with distortion, and that was confirmed in listening tests. The audible bass output decreases as the frequency drops below 50 or 60 Hz but remains reasonably clean in the process.

Taken as a whole, the JBL T820M is a very good small speaker. We listened to it at length before making any measurements and were immediately impressed by its smoothness and balance across the audible spectrum. As it happened, the only other speakers available for comparison were considerably larger and more expensive than the JBL's, and correspondingly good in their performance. A comparison between them and the J820M's was inevitable, and it produced surprising results.

In its balanced, uncolored sound, the J820M easily held its own in the comparison. The larger speakers had a clear advantage in the low bass, but the J820M had a more extended high-frequency response and greater perceived airiness. Teamed with a subwoofer, it could be a worthy competitor to the larger system.

Bottom line, the JBL J820M is an extraordinarily fine-sounding speaker at a bargain-basement price. It deserves a careful audition if you are in the market for a compact, inexpensive, and thoroughly satisfying speaker. □





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Pioneer CLD-D704 CD/Laserdisc Combi-Player

DAVID RANADA • TECHNICAL EDITOR

A couple of important laserdisc milestones have been passed in the nearly two years since we last tested a Pioneer CD/laserdisc combi-player, the CLD-97 (December 1993), only very recently superseded by the CLD-99 at the top of the company's premium Elite line. The first was the introduction of the Dolby Surround AC-3 encoding system for discrete "5.1-channel" digital surround sound into the laserdisc medium, where it replaces, on selected recent laserdiscs, the right channel of the analog FM-audio soundtrack. The second was the introduction of laserdisc players capable of supplying the encoded AC-3 signal for outboard decoding, of which the CLD-D704 — the new top of Pioneer's regular line, replacing the CLD-D703 — is one of the first.

As in other current AC-3-compatible laserdisc players, the CLD-D704's AC-3 output, a phono connector on the back panel, doesn't feed out AC-3 data in standard digital format. Instead, it passes a "radio frequency" (RF) signal, raw from the laser pickup, that carries the AC-3 signal in modulated form. It is intended to be con-

nected to an AC-3 RF input on a suitable surround decoder, either separate or built into an A/V amplifier or receiver (such decoders are becoming available even as you read this). A demodulator in the decoder will extract the actual AC-3 digital signal, which will then be decoded into the six speaker channels (three front, two surround, one subwoofer). To play standard digital or analog laserdisc soundtracks you will also have to make the usual connections from the CLD-D704's line-level stereo audio outputs. Another option for the digital soundtrack is to connect one of the player's digital audio outputs to an external digital-to-analog (D/A) converter — both coaxial and optical connectors are provided. These outputs carry data only from standard laserdisc digital

DIMENSIONS: 16½ inches wide, 5½ inches high, 17½ inches deep

WEIGHT: 18½ pounds

PRICE: \$1,235

MANUFACTURER: Pioneer Electronics (USA), Inc., Dept. SR, P.O. Box 1540, Long Beach, CA 90801-1540

soundtracks, not AC-3 soundtracks, and from CD's.

AC-3 capability, though it is the player's most important new feature, isn't the whole story, however. The CLD-D704 boasts other advanced features, some of such importance that in themselves they render obsolete even so distinguished a player as the CLD-97. One such innovation is a switchable video noise-reduction system whose effects on the luminance (black-and-white) and chrominance (color) portions of a video signal are independently adjustable. A Film Mode button, only on the front panel, switches off what was one of the CLD-97's silliest features: display of a still frame, seemingly selected at random from the current side, as the player switches to the other side. Film Mode also turns off the on-screen displays, however, which are useful for rapid cueing. It would be nice to have separate switches for these two features.

The CLD-D704 has a front-panel headphone output and enables remote control of volume for the headphone and rear-panel line outputs when playing CD's or standard digital laserdisc soundtracks. It also provides automatic side-changing for laserdiscs, a frame memory that makes the full panoply of laserdisc tricks (freeze, slow-motion, and so forth) available with CLV as well as CAV laserdiscs, and a pair each of composite- and S-video outputs.

We were surprised to find, as it is mentioned neither in the manual nor in the product literature we've seen, that

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TEST REPORTS

the CLD-D704 also includes Pioneer's Legato Link digital-audio processing (which we had thought to be exclusive to the Elite line). This system was claimed, in literature for the CLD-97, to reconstitute "[lost] frequencies [above 20 kHz] that are eliminated with existing CD player models" — a performance feature of dubious value given that those frequencies are ultrasonic. We found, through spectrum analysis of the new player's outputs when playing high-frequency (above 10 kHz) CD test tones, that the CLD-D704 did produce substantial ultrasonic output. But, as we also found with the CLD-97, the additional output was quite unnatural in that it was not harmonically related to the original signals: The most prominent components actually moved *down* in frequency as their fundamentals moved *up*, and their frequencies were not even close to being integral multiples of the fundamentals. Fortunately, "ultrasonic" almost by definition means inaudible, and the extraneous high frequencies the CLD-D704 generated didn't hurt its overall sound quality, though they did tend to produce alarming harmonic-distortion readings with high-frequency test tones.



The CLD-D704's digital audio performance was, in fact, very high, as evidenced by both listening tests and lab measurements. Aside from the distortion figure, which was heavily influenced by Legato Link, all the test results were good to excellent. The low-level linearity was especially good, with a 1-dB-deviation point

among the lowest we've measured and an impressive improvement over the already excellent performance turned in by the CLD-97.

The signal-to-noise ratios as determined by playback of a standard zero-signal track were, as often happens, too good to be true, however, and do not reflect the noise levels obtainable with a music CD or a digital laserdisc soundtrack. Fortunately, the more representative signal-to-dither ratio was also good. The 8.9-dB reduction in noise at 3.5 kHz when we played a noise-shaped dither signal was also encouraging, showing that the CLD-D704 will actually deliver much of the promise of so-called "20-bit" CD's mastered from 20-bit recordings by way of techniques like Sony's Super Bit Mapping.

The player's deviation from flat frequency response was due entirely to a rolloff that started above 10 kHz, reaching 1 dB down at 16 kHz, and which therefore had a negligible effect on sound quality. Measured analog AFM audio performance was typical, but with unusually low distortion — which is to say that it was totally out-classed by the player's digital audio performance.

Although the CLD-D704 is not part of Pioneer's high-end Elite line, it fully equaled the Elite CLD-97 in video performance. In fact, when the video noise reduction was engaged, the new model produced a superior picture. The processing yielded a very distinct improvement, especially in color noise, that was visible both in the greater steadiness of the signal on test instruments and, more important, in a reduction of visible on-screen noise. The changes were subtle, even with the controls turned full up, and were most easily seen with noisy program material, such as movies mastered from grainy films. Even Pioneer's manual admits that the effect "may be difficult to see depending on the discs or scenes." The only noticeable side effect of the process was a slightly more visible scan-line structure on horizontally moving vertical edges (common in camera pans). There was no blurring or smearing such as we have seen with other video noise-reduction systems.

The noise reduction is turned on via a set of three front-panel buttons that select among standard settings, user-adjustable settings, and no noise reduction; the remote control has a single button that cycles through the

MEASUREMENTS

DIGITAL AUDIO

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

MAXIMUM OUTPUT LEVEL 2.24 volts

DOLBY CALIBRATION ERROR

(re 2.0 volts) +1 dB

FREQUENCY RESPONSE (20 Hz to 20 kHz)

de-emphasis off +0, -2.15 dB
de-emphasis on +0, -2.88 dB

CHANNEL SEPARATION

125 Hz 127 dB
1 kHz 132 dB
16 kHz 115 dB

CHANNEL IMBALANCE (1 kHz) -0.13 dB

SIGNAL-TO-NOISE RATIO (A-wtd)

de-emphasis off 126.1 dB
de-emphasis on 127.3 dB

SIGNAL-TO-DITHER RATIO (A-wtd) 95.5 dB

DYNAMIC RANGE (EIAJ) 95.1 dB

DISTORTION (THD+N at 0 dB, 20 Hz to 20 kHz) <8.5% (see text)

LINEARITY ERROR

1-dB-error point -116 dB

DEFECT TRACKING (CD only, Pierre Verany #2 test disc) 1,000 µm

IMPACT RESISTANCE (CD, top and sides) A

CUEING ACCURACY (CD) A

SLEWING TIME (CD) 3 seconds

AFM AUDIO

All figures are for laserdisc only; all data taken with REF-EA1 test disc

MAXIMUM OUTPUT LEVEL

left/right 0.42/0.45 volt

FREQUENCY RESPONSE

. 20 Hz to 20 kHz +2.1, -3.4 dB

CHANNEL SEPARATION (at 1 kHz) 68.3 dB

CHANNEL IMBALANCE 0.72 dB

SIGNAL-TO-NOISE RATIO (A-wtd) 74.8 dB

DISTORTION (THD+N at 1 kHz) 0.26%

VIDEO

All data taken with REF-EA1 test disc

VIDEO OUTPUT-LEVEL ERROR <1% high

HORIZONTAL LUMINANCE RESOLUTION

wedge test pattern 430 lines

HORIZONTAL LUMINANCE BANDWIDTH

. -3 dB at 4 MHz

CHROMA ERRORS

gain ±<2.5%
phase ±<2.5°

CHROMA DIFFERENTIAL GAIN 12%

CHROMA DIFFERENTIAL PHASE 2°

SIDE-CHANGE TIME 11 to 12 seconds

three options. Adjustments are made by turning the jog dial for chrominance and the shuttle ring for luminance. Since the shuttle ring is also used to adjust volume, the jog/shuttle combo has two possible uses beyond its original precision-cueing function. The remote has a different set of jog/shuttle function-switching buttons from the front panel, however, so a considerable amount of mental reorientation is necessary when moving between the two.

That bit of operational clumsiness is exacerbated by other slight discrepancies between the remote and the front

In addition to providing a Dolby AC-3 output, the Pioneer CLD-D704 features a very effective video noise-reduction system.

panel. You can't put the player into pause from the front panel until a track is actually cued up, because there is no separate pause button on the front panel. But from the remote you can press play and then immediately press a pause button (not easy to find), and the player will catch up with you. You can't operate the line-level volume control from the front panel, and you can't toggle the Film Mode from the remote. Unlike the front panel, the remote uses a single button for both stop and eject. The remote's numerical keypad operates differently depending on what kind of cueing you are performing, and its side-change buttons are far too easy to hit accidentally. Finally, and most annoyingly, the remote still has a useless and inconvenient on/off button for the jog dial. Why Pioneer insists on its inclusion when other companies have managed to produce workable jog/shuttle controls without such a button is beyond me.

It's unfortunate that such ergonomic flaws continue to afflict Pioneer's laserdisc players when so many of them would be relatively easy to eliminate. The frustration is all the more acute in the case of the CLD-D704, which offers such high audio and, especially, video quality, not to mention that very desirable AC-3 output. Still, if it's laserdisc performance you want, you can't beat the CLD-D704. □

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- Edward J. Foster, Home Theater Magazine, June 1995



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TEST REPORTS



LOOK P. LEUNG

Sennheiser HD565 Ovation Stereo Headphones

JULIAN HIRSCH • HIRSCH-HOUCK LABORATORIES

Sennheiser manufactures a comprehensive line of headphones and microphones, ranging from inexpensive consumer products to the finest professional components. One of the company's latest consumer stereo headphones is the HD565 Ovation, a high-quality design that boasts a number of advanced features.

There are two major classes of headphones: those whose transducers are in sealed earcups that exclude ambient sound from the wearer's ears, and the open-air variety, whose transducer diaphragms radiate sound from the backs of the earcups as well as into the wearer's ears. Open-air phones are usually lighter and more comfortable to wear and are widely used for home hi-fi listening.

Although the HD565 is of the open-air type, it looks somewhat bulky, with large earcups that fully enclose the ears. Instead of the usual rubber or plastic ear cushions, the HD565's cushions are made of a velvet-like cloth, and its spring-type headband is padded with a foam strip.

Unlike most other headphones we have used, the HD565 is designed for easy user replacement of all parts that are likely to wear out or could be damaged in normal use. These include the 3-meter (about 10-foot) connecting cord and phone-plug assembly, which is fitted with polarized connectors, and the ear cushions, whose plastic rims snap into the earcups.

The warranty booklet supplied with the phones also contains informative material (in five languages) on the meaning of the various applicable specifications and on the significance of the phones' design features. The specs are based on the German DIN 45500 standard, however, and are not easily interpreted in terms familiar here. The frequency response is given as 16 Hz to 30 kHz, and the distortion

WEIGHT: 9 ounces

PRICE: \$279

MANUFACTURER: Sennheiser Electronic Corp., Dept. SR, P.O. Box 987, Old Lyme, CT 06371

as less than 0.15 percent, without further elaboration.

The HD565 is an exceptionally comfortable headset to wear. The earpieces cover the ears without imparting a sense of pressure. And despite their massive appearance, they are light in weight and essentially transparent to sound. The slender connecting cable is light and unobtrusive.

We measured the HD565's frequency response on an ASA-standard headphone coupler. From a maximum output at 100 Hz, the response sloped downward smoothly to a minimum at 10 kHz and rose about 2 dB from 10 to 20 kHz. The overall response of ± 4 dB from 20 Hz to 20 kHz was excel-

The Sennheiser HD565 is designed for easy user replacement of all parts likely to wear out or be damaged in normal use.

lent (we have yet to find a loudspeaker that could match it).

Distortion at 1 kHz (measured by spectrum analysis to exclude noise) was in the neighborhood of 0.1 percent (-57 to -62 dB) at inputs of 1 and 5 volts. It was almost all third-harmonic, with the fourth and fifth harmonics being in the vicinity of 0.01 percent. The impedance of each channel measured between 140 and 210 ohms over the audio frequency range.

Listening to the Sennheiser HD565 headphones confirmed the validity of

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- Corey Greenberg, Home Theater Technology, Volume 2, No. 7



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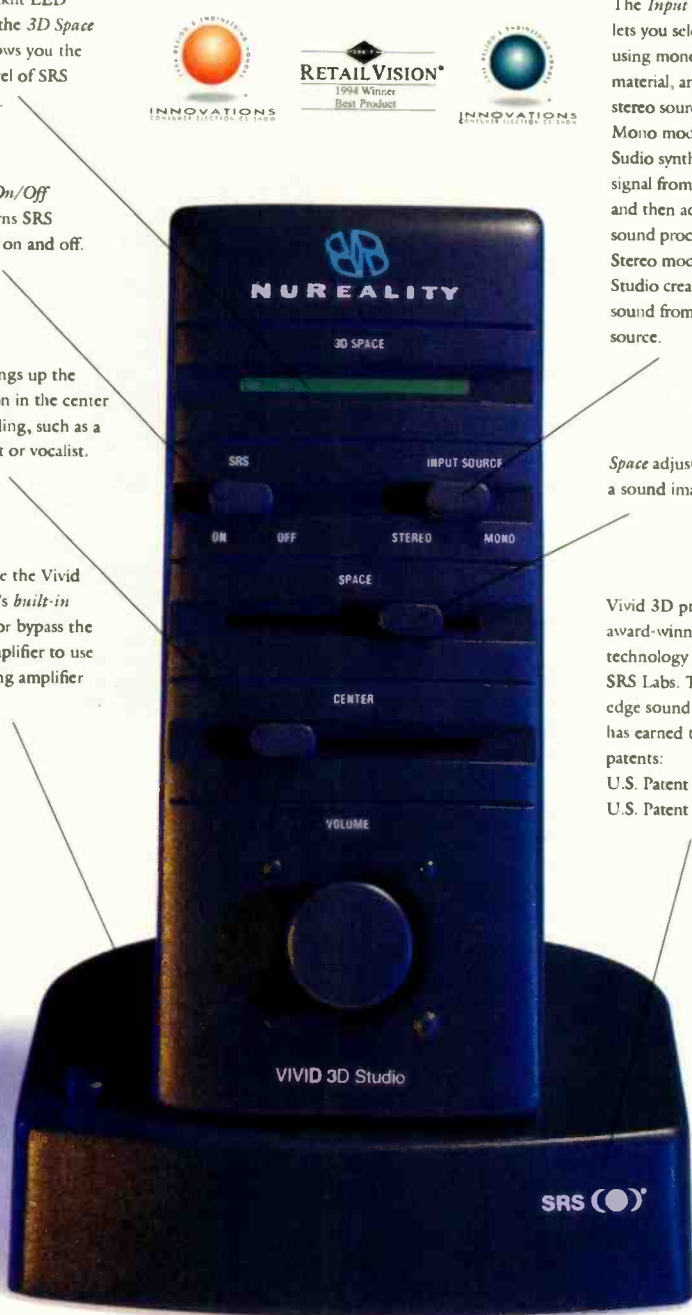
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Vivid 3D products employ award-winning SRS technology licensed from SRS Labs. This leading-edge sound technology has earned the following patents:
U.S. Patent No. 4,748,669
U.S. Patent No. 4,841,572



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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. © 1995 NuReality. All rights reserved. SRS is a registered trademark of SRS Labs. All product names are trademarks or registered trademarks of their respective holders. SR3



CHOOSING A LOUDSPEAKER

How to go about selecting speakers you can live with



Mission's 12½-inch-tall Model 731 (\$249 a pair, above and at right on optional stand) features a patented isolated-driver design that is said to improve clarity.

possible. For one thing, there are hundreds of speaker manufacturers and literally thousands of models to choose from, and the cast of players changes daily. I probably have tested as many speakers as anyone (well over 600), and it is a fact that most of them, while acquitting themselves well, have failed to achieve any sort of universally accepted classic status. Only a handful of exceptions come to mind, such as the Klipschorn, AR-1, and Quad Electrostatic, each of which represented a milestone in the speaker art. But you are facing the problem of choosing from among

No part of assembling a high-fidelity music system is as important as choosing the loudspeakers. Everything you hear from an audio system comes from the speakers, and normally they are the only components in a system that directly affect the way it sounds (assuming that all the equipment is functioning properly). Does that mean that everything else in the system is unimportant? Absolutely not — all of it is needed to produce sound, and if any component does not perform adequately there will be some degree of audible degradation. But practically speaking, the quality of the sound you hear in a good modern hi-fi system is determined by the program source (nowadays typically a CD) and the combination of loudspeaker and room characteristics, which interact very strongly. The acoustic treatment of the listening room and the placement in the room of the furnishings and speakers, as well as the listeners, can (and usually do) have a major effect on what you hear. What we're concerned with here, however, are the loudspeakers themselves. I wish I could tell each of you which loudspeaker to buy (or not buy). Unfortunately, that is not



BY JULIAN HIRSCH

CHOOSING A LOUDSPEAKER



One beauty of three-piece systems like the Bose Acoustimass 5 Series II (\$799) is that you can put the bass module in an inconspicuous location.

today's speakers, not the classics of the past. Where do you start? This is a good time to point out the often overlooked fact that loudspeaker selection is as personal and subjective a process as choosing a car, clothing, or the food you eat. Although there certainly are objective criteria for the performance of speakers intended for reproducing music in the home, personal preference plays an enormous role in making the final purchase decision.

As a rule of thumb, I suggest that your investment in speakers should be at least 40 or 50 percent of the total cost of your system. That is a flexible figure, subject to considerable variation according to the complexity of the system and its total cost, but it is a pretty good estimate for a moderately priced basic stereo setup. Just remember that no matter how fine the rest of the components in your system, playing them through \$100-a-pair speakers will probably make the whole thing sound like something you picked up at a bargain sale. On the other hand, a good \$3,000 speaker will usually sound first-rate even when driven by a receiver selling for a small fraction of that price. Those are extreme examples, of course, but they nonetheless illustrate an almost universal verity.

Disregarding price for the moment, let's look at your options. The end use is an important factor. A system for a bedroom or another secondary system will probably be perfectly satisfactory with a pair of inexpensive bookshelf speakers. Almost any reputable recognized brand will do the job.

But for a system intended for serious listening, your standards are likely to be more rigorous in almost every respect. Often such a system is installed in a family living room, where



Martin-Logan's 55-inch-tall Aerius (\$2,095 a pair with oak trim) has an 8-inch woofer and uses an electrostatic panel to reproduce high frequencies.

it may be highly visible (as well as audible). Speakers differ greatly in size, weight, appearance, and placement requirements, all of which should be evaluated in making a choice.

One of the most common speaker configurations is a simple rectangular box, sometimes small enough and light enough to be placed on a sturdy shelf, but often best suited to floor or stand placement. Especially in the low price range (but by no means limited to that), such speakers are usually two-way systems (woofer and tweeter) in a closed or vented box.

Despite their "bookshelf" format, these speakers often sound their best when placed on a stand a few feet from a wall. That may be inconvenient in small rooms, so take it into consideration when shopping. Try to listen to the speakers placed more or less the way they will be in your home.

An increasingly popular speaker configuration is the "three-piece" system. As the name suggests, it consists of two small "satellite" speakers and a separate bass module (often optimistically referred to as a "subwoofer," though in fact it is serving the function of the woofers in conventional speakers and rarely delivers deeper bass). A good three-piece system, though not necessarily inexpensive, meets a genuine need in many cases. The format



The C700i/r (\$749 a pair) and C500i/r (\$649 a pair) in-wall speakers from ADS combine a ribbon tweeter with an 8-inch and a 6½-inch woofer, respectively.

lends itself to inconspicuous installation and can be almost invisible (I use such a system in our TV room, where it does an excellent job). The sound quality of a three-piece speaker system can be surprisingly good, though not always the equal of some comparably priced conventional systems.

Large floor-standing speakers, although often of two-way design, are more likely to be three-way systems, with separate bass, midrange, and treble drivers. That does not, in itself, make a speaker better than a two-way design. In fact, some very expensive (and high-quality) speakers are two-way systems. But it may enable the system to use a larger woofer than would otherwise be practical, increasing the total amount of acoustical energy the speaker can produce.

The most fundamental advantage of a large speaker enclosure is its potential for an extended bass response. If efficiency and woofer size are held constant, increasing the enclosure volume will lower the frequency at which the bass response begins to fall off. Increasing the size of the woofer cone, on the other hand, will tend to raise the low-frequency cutoff unless efficiency is reduced or enclosure size increased to compensate. By the same token, reducing the size of the woofer will diminish the enclosure volume required to achieve a given efficiency and low-frequency cutoff, at the expense of a lower maximum output level at the bottom end. So if you're an organ or synthesizer buff seeking extremely deep bass, don't assume that you will get it just by buying a speaker with a huge woofer. Depending on other design characteristics, that may actually work against you!

The number of drivers and their

sizes are not, per se, indicators of quality in a speaker. Some excellent speakers, selling for several thousand dollars, have only a 6-inch cone driver and a small tweeter, for example. All else being equal (which it rarely is), a larger radiating surface will put out a greater quantity of bass, but there is, or should be, more than that to good sound.

A number of speakers now feature bipolar configuration. That involves having two identical sets of drivers, normally facing front and rear, which can produce a distinctive and pleasantly spacious sound quality. These speakers should be placed a few feet in front of a wall to produce the intended effect, so they may require a larger room for best results. They are available over a wide range of prices from several manufacturers.

At this point, you may well ask "How do I go about making an intelligent selection from this confusing and overwhelming set of possibilities?" A good beginning would be to visit a dealer with a well-equipped demonstration room and present him with your problem. He should be able to make suggestions from any suitable brands that he carries. Have him demonstrate them, using electronic components that are comparable in price range and power ratings to your planned or present components. Take along some recordings, preferably on CD, with which you are thoroughly familiar. The reason for carrying your

Your investment in speakers should be at least 40 or 50 percent of the total cost of your audio system.



own recordings is to help you make comparisons of speakers in the store. Don't expect, however, that you can make a good comparison between speakers in the store and the ones you have at home without having them in the same place at the same time. You may be able to get a rough idea, but acoustic memory is surprisingly short.

If you find speakers whose sound and price are to your liking, perhaps you can take them home for a trial. Alternatively, you may be able to buy them with an option to return for credit or refund. The ideal way to choose a new speaker (if you already have a functioning music system) is to compare it side by side, in your own home, with your older speakers, using your own familiar program material. Remember, the room dimensions, furnishings, and acoustic treatment have a profound effect on the sound.

If any of your possible choices are speakers that we have tested and reviewed in STEREO REVIEW, you can also use the published reports as a guide to making a selection. Almost any one we bother to review will be of at least average quality, and the list includes speakers spanning a wide range of size, price, and performance. Even if the reviewed model is no longer available, as a general rule speaker manufacturers maintain their own standards carefully and apply the

same basic principles of quality and performance across a product line.

Another obvious source of (sometimes) useful information and advice on speakers is from friends and acquaintances who happen to be audio enthusiasts. For example, if a friend's system sounds great to you, there is a good chance (though no guarantee) that it would do well in your home too. If his speakers are reasonably small and light, perhaps you could borrow them for a couple of hours. A less satisfactory alternative might be to take your CD's to his house and hear them on his equipment. Just bear in mind that the speakers may sound different in your own home.

A related question may arise in this sort of evaluation with regard to the contributions of the other components in the system. Suppose, for example, that your friend's amplifier is considerably more expensive than the one in your more plebeian system. If his system is clearly better-sounding than yours, where does the credit go? To the speaker? To the amplifier? Possibly to the room itself or some other aspect of the system?

Now, I am not saying that there *cannot* be sonic differences between amplifiers (although they are much less common than some would have you believe); the choice of amplifier may affect basic sound quality (that is, at levels below overload) in some rare instances. But the audible effects of the speaker/room portion of the sys-



Shown on optional stands, Paradigm's 13-inch Mini-Mk3 (\$329 a pair) and 20-inch 3seMk3 (\$399 a pair) are rated down to 40 and 36 Hz. Finish is black oak vinyl.



Designed for side- or rear-wall mounting in a surround-sound setup, The Surround (\$400 a pair) from Cambridge SoundWorks features a dipole driver configuration.



The Klipsch KG 5.5 (\$1,000 a pair) teams the company's trademark horn tweeter with two 10-inch woofers in a 37½-inch-tall black wood-veneered cabinet.

CHOOSING A LOUDSPEAKER

tem are so many orders of magnitude greater than those of any properly functioning amplifier that it would be foolish to look first to the amplifier as the source of any differences in sound quality.

If space is limited, your choice will most likely have to be one of the many available compact speakers. Although

we've all heard of the dyed-in-the-wool audiophile who's stuffed a pair of *large* speakers, plus numerous electronic components, into a 9 x 12-foot room, it bears repeating that the only reason for a large enclosure is to hold the drivers that propagate the lower bass frequencies. If your musical tastes run to lighter fare, a well-de-

signed, well-made small speaker may meet all your needs.

Finally, keep in mind that nothing in life is perfect, and some compromise is always necessary. If your room is odd-shaped, and the speakers have to go in unorthodox places, don't be afraid to experiment. You might be pleasantly surprised with the results! □

STEPPING UP TO SURROUND SOUND

One of the things anyone putting together a home theater system has to come to grips with is the need for quite a few speakers – at least four and preferably five, plus, possibly, a subwoofer. Not only is there the question of how to fit them all in a room without making it look like a hi-fi showroom, but also of making sure that they all work together well sonically. Here are some of the things you need to think about when selecting speakers for home theater.

PLACEMENT. Have a clear idea at the outset of where speakers must or can go. That will be dictated in large part by TV placement, since you will need left and right front speakers flanking it as symmetrically as possible and, ideally, a center speaker directly above or below it. Choosing speakers that won't fit that plan will cause problems. Placement of the two surround speakers is somewhat more flexible, but they do need to be to the sides or rear of the listening position. The best location is often on the side walls somewhat above ear level, but that's by no means the only option. Just remember that you want the surround speakers to disappear sonically as much as possible. They should create a diffuse, enveloping sound field and not stand out as distinct, localizable sound sources. Usually that means you don't want them aiming directly at the listening position.

MATCHING. Just as in two-channel stereo, the best results will be achieved if all the speakers in the system sound as much alike as possible. One way to achieve that is to use identical speakers all around. That's not always practical, however, and not necessarily desirable. For example, you may need relatively large front left and right speakers to get adequate low-frequency extension and

bass output but a relatively small center speaker to fit on top of the TV set. And you probably will find it beneficial to have surround speakers with relatively diffuse radiation patterns, regardless of the front speakers.

Fortunately, manufacturers are making the choices easier by recognizing these potentially conflicting requirements and designing families of speakers to cope with them. So if you don't go with identical speakers for all channels, narrow your shopping list to models from com-



KEF's Reference Series Model 100 center speaker (\$500)

panies that design speakers of different sizes and configurations with the same "voicing," or tonal balance. The left and right front speakers should be the same, just as in a conventional stereo system. Similarly, the surrounds should be a pair of identical speakers, not necessarily the same as the main front pair but having a similar tonal balance, especially through the midrange and treble (extended low-frequency response is not necessary for the surrounds). Finally, the center speaker should match the tonal balance of the front left and right speakers as closely as possible down to at least 100 Hz. You want the sound across the front three speakers, especially, to be seamless.

And in most cases you will want the center speaker to be magnetically "shielded," to prevent color distortion when it is placed near a direct-view TV set.

BASS. Movie soundtracks often contain substantially more energy in the bottom octave, between 20 and 40 Hz, than is commonly found in music (most music, in fact, doesn't go below about 50 Hz). That means that you may want more extended bass response in a home theater system than you would demand in one intended solely for music reproduction, and you will almost certainly have to be more concerned about low-frequency power-handling capacity. If you have front left and right speakers with good low-frequency capability you can simply direct the bass for all channels to them. A more elegant and effective solution, however, is to add a subwoofer to the system and send all the deep bass to it instead. Just be sure that you get a true subwoofer, capable of flat response down to at least 25 or 30 Hz. Not only will you get better bass performance, but you will also be free to use relatively compact main, center, and surround speakers.

MUSIC VS. MOVIES. People often assume that speakers that work well for home theater will not be suitable for music listening, or at least will not perform as well in that function as "normal" speakers. Nothing could be further from the truth. The final acid test for any speakers you consider should be how they sound playing high-quality music recordings. If they don't sound good on music, you can be sure that you could do better for soundtracks as well. The fundamental requirements – smooth, extended response, even dispersion over the listening area, and low distortion – are the same for both. — Michael Riggs



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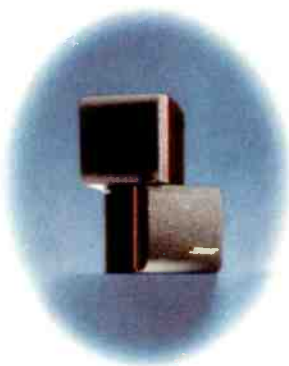
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The Center of

The inclusion of a center channel is easily the most intriguing aspect of modern home theater systems. Like a topnotch NBA team — perhaps a team with someone named Hakeem in the middle — a high-performance entertainment system with strength at the center position truly excels by delivering excellent sound quality for multiple listeners and listening positions.

Classic two-channel stereo has a tightly defined sweet spot typically limited to only one or two seats, because it relies on a “phantom” center image. Accurate positioning of sounds between the main speakers can be maintained only as long as the listener remains centered between the left and right speakers. Since the most important information is usually smack in the middle of the stereo image, that’s a significant limitation.

The center channel in a home theater system supplies a “hard” source for that information, keeping it locked in place even when the listener chooses a chair well off the center line. (It also improves the tonal balance of centered sounds by eliminating the lower-treble cancellation notch characteristic of phantom-center stereo reproduction.) Once released from the curse of sweet-spot listening, it’s hard to go back.

A center-channel speaker carries a heavy performance burden, however. It must cover a wide radiating area, encompassing all seats in the room, and because it will carry most of the dialogue and solo vocals it must provide high sound quality. Further, because it will be placed very near the TV screen, it must be magnetically shielded to prevent video interference with direct-view sets. And it helps if the speaker is small and attractive (especially for use with the popular 27-inch screens).

Fortunately, manufacturers have been hard at work on the problem, as witness the collection of center speakers assembled for this review. All are designed to fit into a home theater over or under the TV screen. They are all magnetically shielded to prevent color interference even when placed directly on a television. They all deliver good sound quality. And most of them are small and good-looking.

Nine (plus one) top center-channel speakers go for the gold in home theater



**by Tom
Nousaine**

the Action



The Center of the Action

The performance goals of all good speakers are pretty much the same. We would like smooth response and high output capability at all listening angles over the bandwidth the speakers will be required to reproduce. Since virtually all home theater systems provide bass-management functions to divert the power-hungry low bass (below around 100 Hz) to the front left and right speakers or a subwoofer, the center speaker normally has to work only from the upper bass or lower midrange on up. It must, however, deliver the goods evenly over a wide horizontal angle to reach seats that may be 45 degrees off to the sides. That means the best center speakers will produce smooth response over a 90-degree arc in front of the screen — a Herculean task for any speaker.

Test Procedure

To evaluate the speakers in this group I installed each one atop a 51-inch rear-projection TV set in my home theater system and drove it with a 250-watt power amplifier. That placed the center of the speaker baffle approximately 52 inches above the floor, about 42½ inches out from and centered on the short wall of a 12 x 22¼-foot listening room with an 8-foot ceiling. This placement met the instal-

lation specifications for all the speakers tested.

I then made in-room frequency-response measurements at a height of 37 inches, approximately matching a seated listener's ear height, and 2 meters from the speaker at angles matching those of three primary listening positions in my room: dead center, as in the middle of the main listening couch, approximately 30 degrees off-center at the right end of the same couch, and 45 degrees off to the right in a wing chair. The last position serves as a torture test to separate the merely excellent speakers from the world-class ones, but it is nonetheless a real seating position. The measurements do reflect the acoustical influences of my living room and the TV screen, but they are indicative of what you might expect in a typical system. If a speaker is placed against a wall, low-frequency response will be somewhat more extended than what I measured.

Then I listened, hard, at each of the three main positions. Using a set of specially prepared voice and music tracks, movie soundtracks, and pink noise, I checked out each speaker's ability to deliver flat, clean, detailed sound from the midrange up, paying special attention to male and female voices and the speaker's ability to project a sense of space or depth around the performers.

Each speaker was evaluated individually and compared directly with an anchor speaker, a high-performance two-way bookshelf speaker with an 8-inch woofer, mounted on a stand slightly to the left of the TV and aimed to provide a high-quality sonic benchmark at each listening position. The anchor is an excellent main or center-channel speaker in its own right, but its vertical orientation and height disqualify it for center duty in most surround-sound applications.

Program material included the campfire scene from *Indiana Jones and the Temple of Doom*; an anechoic recording of a familiar male voice; four popular-music tracks with familiar and well-recorded female vocals (solo and with backup singers) accompanied by acoustic and electric instruments; a jazz trio of acoustic piano, drums, and bass; a big band; and full-bandwidth pink noise. If a center speaker can realistically reproduce acoustic instruments and vocals it will excel for both movies and music.

KEF MODEL 100



ENCLOSURE: gray; ported

DRIVER COMPLEMENT: 6½-inch woofer with coincident-mounted 1-inch fluid-cooled dome tweeter

SPECIFICATIONS: bandwidth, 70 Hz to 20 kHz; sensitivity, 90 dB SPL; impedance, 6 ohms; crossover, 3 kHz; maximum output, 111 dB SPL; recommended amplifier power, 25 to 175 watts into 4 ohms

DIMENSIONS: 18½ x 6⅞ x 6⅞ inches (W x H x D)

WEIGHT: 11½ pounds

WARRANTY: 5 years

PRICE: \$500

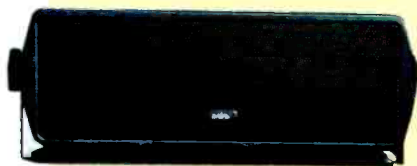
MANUFACTURER: KEF, Dept. SR, 89 Doug Brown Way, Holliston, MA 01746

Finally, playing a popular recording with electric bass, I slowly increased the input to each speaker to a level that would cause audible distress from the anchor speaker's woofer. Although I wouldn't normally expect a center speaker to handle full-range bass, this test told me whether the speaker would be able to handle overload levels gracefully (noiselessly), whether a user could consider using it in Dolby Pro Logic's full-range Wide center-channel mode, and whether it was suited for systems with minispeaker mains.

The Contestants

Dedicated center-channel speakers mostly come in one basic style — flat and wide to fit on top of a TV screen. The driver complement is typically a pair of horizontally arrayed woofers (4, 5¼, or 6½ inch) flanking a tweeter (or sometimes two). The usual problem with such a driver layout is a tendency for response anomalies to become evident as the listener moves off the forward axis, anomalies brought on by dispersion limitations or interference between the outputs of the two woofers. As a result, the speaker may sound great from the couch but not so good from seats off to the sides. The extent to which such anomalies are avoided or overcome is a good index of the designer's skill.

ADS AVF 144



ENCLOSURE: matte-black aluminum with perforated metal grille; sealed

DRIVER COMPLEMENT: two 4-inch copolymer woofers flanking a 1-inch copolymer-dome tweeter

SPECIFICATIONS: frequency response, 70 Hz to 23 kHz ±3 dB; sensitivity, 89 dB SPL; impedance, 8 ohms; crossover, 18 dB per octave at 2.5 kHz; recommended amplifier power, 10 to 100 watts

DIMENSIONS: 13 x 4½ x 6⅞ inches without bracket, 14 x 5¼ x 6⅞ inches with bracket (W x H x D)

WEIGHT: 7½ pounds

WARRANTY: 3 years

PRICE: \$449

MANUFACTURER: ADS, Dept. SR, One Progress Way, Wilmington, MA 01887

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In fact, past comparisons I've conducted with such speakers have almost always revealed steadily deteriorating, if not downright awful, sound at extreme off-center seats. I was, therefore, pleasantly surprised to find that all of the seven speakers with horizontally arrayed drivers evaluated here maintained consistent sound quality over a ± 30 -degree arc, providing the same sound to all of the couch seats, and even the compromises evident at the more extreme positions were man-

aged in a way that minimized their sonic impact. This shows that manufacturers have been improving their designs over the past couple of years.

Another way to address the need for wide horizontal dispersion is through coincident or coaxial driver mounting. In a two-way coincident driver the tweeter is mounted at the center of the woofer cone where the dust cap would normally be located. Theoretically, launching all the sound from a single (coincident) point in space avoids the

interference effects that typically occur with multiple spaced drivers, yielding uniform radiation in all directions. Two of the speakers in this group, from KEF and Vandersteen, use coincident drivers with excellent results.

ADS AVF 144

The ADS Audio Video Focus 144 is an unusually compact acoustic-suspension center speaker with horizon-

MARTIN-LOGAN, ELECTROSTATICALLY SPEAKING

If you're a company that specializes in electrostatic loudspeakers — traditionally large, vertical panels — what do you do about home theater? In particular, what do you do for a center-channel speaker? How do you match the performance characteristics of your other speakers in a package that will integrate gracefully with a TV screen? One answer (the only one we know of, in fact) is the Martin-Logan Logos, which combines a pair of horizontally deployed electrostatic panels with a cone woofer and a dome tweeter. The result is an exotic, complex, and expensive loudspeaker with radically distinctive styling — a center speaker geared for those who refuse to walk with the crowd!

You know the Logos is something special the instant you lay eyes on it. First, it is huge by center-speaker standards — 62 pounds, 40½ inches wide, 11¾ inches high, and 9½ inches deep. Second, it is a three-way speaker employing a 6½-inch cone woofer (similar to the one used in the company's Stylos speaker), two 17 x 9¼-inch curved electrostatic midrange panels, and a ½-inch titanium-dome tweeter. Finally, there's the price tag: \$1,750. Not outrageous by the standards of its breed, but well above the prices customary for conventional center-channel speakers.

Inner works include a curved-fascia support structure that holds the twin electrostatic panels, which are mounted on either side of its face. The tweeter is centrally mounted between the electrostatic midrange panels, while the woofer resides in a sealed cabinet formed behind the curved face as an integral part of the enclosure.

The enclosure itself fits into a heavy steel mounting bracket with a machine bolt and

bushing at each end. The Logos is adjusted vertically to aim directly at the listening position and then secured in that orientation by tightening the machine bolts with a supplied Allen wrench. The bracket is designed so that the Logos can be placed on a TV set or shelf or, if you prefer, mounted on the floor or a wall. Be careful, however, about securing a 62-pound speaker to drywall on 16-inch studs with a bracket that has mounting holes 19 inches apart.

The Logos comes packaged with spikes, rubber feet, and screw-in drywall adaptors for wall mounting. You also need a nearby AC outlet, since the electrostatic panels require a polarizing voltage.

The Logos exhibited a fairly constant radiation pattern established primarily by the two electrostatic panels, which operate between 300 Hz and 3.5 kHz. That means roughly a ± 5.5 - to ± 6 -dB envelope from 92 Hz to 16 kHz at all operating angles. Response dropped off at 3 dB per octave below 500 Hz, and an interference pattern around the 3.5-kHz crossover at couch-end angles was joined by another at 1.5 kHz at the 45-degree wing-seat angle.

The Logos sounded rather hollow directly on-axis. Voices were intelligible but colored, percussion jangly, and the spatial presentation pinched and narrow. Moving to the sides, off-axis, ameliorated the colorations, however: Voices became fairly neutral, and the speaker opened up spatially, though the center image tended to shift with the listener. That worked okay for the couch seats, just causing the main sound image to center up directly in front of the listener instead of perfectly middle-screen. Heard from the wing seats, though, a center soloist moved with the listener toward the

near-side main speaker, making the soundstage lopsided.

The Logos had excellent sensitivity for an electrostatically based speaker, clocking in at 89 dB SPL. The woofer cone bottomed loudly when fed high-level electric bass, however. Use Pro Logic's Narrow mode with these babies. Low-frequency resonance for the sealed-box woofer was at 56 Hz, and the system reached its minimum impedance of 2.8 ohms at 2.9 kHz, just at the upper end of the electrostatic panels' operating range.

Like an exotic car, the Martin-Logan Logos is a product suited pretty much exclusively to enthusiasts — people who will appreciate it for what it is and be prepared to accept or work around its quirks and eccentricities in order to enjoy its strengths. Anyone with electrostatic main speakers already probably fits in that category, however, especially if he is contemplating a home theater built around



them. Properly set up, the Logos can sound very good provided you're willing to accept a relatively small range of listening positions. And among dedicated center-channel speakers, it is probably the best match available for Martin-Logan's other speakers (all electrostatics or hybrids like the Logos). For electrostat buffs making the move to home theater, the Logos fills a void. — T.N.

Martin-Logan, Dept. SR, P.O. Box 707,
Lawrence, KS 66044

NHT VS-2

ENCLOSURE: gloss-black with removable black cloth grille; sealed

DRIVER COMPLEMENT: two 5¼-inch woofers flanking a 1-inch fluid-cooled soft-dome tweeter

SPECIFICATIONS: frequency response, 75 Hz to 21 kHz; sensitivity, 88 dB SPL; impedance, 8 ohms nominal, 4 ohms minimum; crossover, 2.3 kHz

DIMENSIONS: 19 x 7¾ x 8 inches (W x H x D)

WEIGHT: 17 pounds

WARRANTY: 5 years

PRICE: \$450

MANUFACTURER: NHT, Dept. SR, 535 Getty Ct., Bldg. A, Benicia, CA 94510



tally deployed drivers. It comes with a C-bracket that can be used as an adjustable stand or for wall or ceiling mounting. Amplifier connections are via five-way binding posts.

Ergonomically, the AVF 144 led the pack. The stylish little speaker was easily liftable with one hand, and its stand/bracket enables you to position it and direct its output optimally for virtually any installation.

The AVF 144's measured in-room response was quite good directly in front of the speaker, with a bandwidth of 100 Hz to 20 kHz tucked inside a ± 5 -dB window. There was a crossover notch centered at 4 kHz that actually narrowed slightly at 30 degrees off-axis. The wing seat, however, was greeted by a wide trough from 600 Hz to 2 kHz, and the tweeter was pretty much out of the picture at that angle by 10 kHz. Measured sensitivity was a little lower than usual for this group at 86 dB. The system's low-frequency resonance was at 102 Hz, and the minimum impedance was 6 ohms at 5.9 kHz. We would agree with ADS's overall impedance rating of 8 ohms.

Sonically the AVF 144 did a workmanlike job on dialogue and vocals from all couch positions, limited mainly by a sound field tightly bound to the enclosure. Spectrally, the system

had limited body and was a little hot-sounding overall. At the wing position, the overall tonal balance retained its hot character, but vocals were still remarkably natural. The speaker's tiny woofers crackled with pain when driven hard, so it should be used with Pro Logic's Normal mode.

KEF Model 100

The Model 100 may not be the cheapest center speaker on the block, but it's an awfully good one. Styling is tasteful, with a modern high-tech flair, and the construction quality appeared very good. Like most of the other speakers in this roundup, the Model 100 is equipped with dual five-way binding posts on the back for super-easy hook-up. It has two sets of them strapped together with metal strips, which can be removed for biwiring or biampification. There are no user controls.

KEF's Uni-Q coaxial driver is perfectly suited for center-channel duty. For starters, it produced fantastic in-room measurements, with virtually flat response (± 3.0 dB) from 100 Hz to 14 kHz, where the tweeter starts to roll off. Moving to the end of the couch produced nearly identical performance, 97 Hz to 12 kHz ± 3.0 dB, and even at the far right the Uni-Q managed to stay within ± 4 dB from 60 Hz (there is always more bass near the wall) to 12 kHz. That is nothing short of phenomenal performance.

Sound quality was also outstanding. Voices were natural, clean, sweet, and clear at all the listening positions. The Model 100 also delivered an excellent sense of spatiality. In other words, the sound seemed to emanate from space rather than directly from the speaker box itself, and there was a sense of depth to the soundstage even at extreme listening angles. The only minor shortfall was a tiny tonal "plump" that could husky up female vocals ever so slightly. That may have been tied to a small elevation around 250 Hz, which was apparently associated with the speaker's room position.

Dynamics were about average for this crowd. Sensitivity was 90 dB SPL at 1 meter with a 2.83-volt input (equivalent to 1 watt into 8 ohms). The vented enclosure was tuned to 73 Hz, and the minimum impedance was 3.4 ohms at 233 Hz — making this a 4-ohm speaker if I ever saw one. The Model 100 could be coaxed into overload at about the same level as my

main speakers, but it should be suitable for Pro Logic's Wide mode in all but the most extreme circumstances.

NHT VS-2

The VS-2 has a horizontal woofer-tweeter-woofer design. The back of its gloss-black cabinet sports dual five-way binding-post connectors and a clever post that adjusts to tilt the cabinet so that it aims directly toward the listening area. It is a good-looking speaker, and I particularly like the way its nicely finished grille cloth stands slightly away from the cabinet's front panel.

The VS-2 delivered darn good response all along the main couch seats, ± 4 dB from 83 Hz to 20 kHz directly on-axis and ± 3 dB from 82 Hz to 14 kHz at 30 degrees off to the side. As with many of the speakers in this comparison, the response tilted upward slightly with increasing frequency. At 45 degrees off-axis the output developed a deep, wide hole from 600 Hz to 3 kHz.

The VS-2's sound consequently exhibited a compressed quality with a

PARADIGM CC-300

ENCLOSURE: black-ash vinyl finish; ported

DRIVER COMPLEMENT: two 6½-inch woofers flanking a 1-inch fluid-cooled textile-dome tweeter

SPECIFICATIONS: frequency response, 55 Hz to 20 kHz ± 2 dB; sensitivity, 92 dB SPL; impedance, 6 ohms nominal, 4 ohms minimum; crossover, 18 dB per octave at 2 kHz; recommended amplifier power, 15 to 175 watts

DIMENSIONS: 22 x 7¼ x 15 inches (W x H x D)

WEIGHT: 25 pounds

WARRANTY: 5 years

PRICE: \$299

MANUFACTURER: Distributed by AudioStream, Dept. SR, MPO Box 2410, Niagara Falls, NY 14302



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PSB STRATUS C5



- ENCLOSURE:** dark oak, black oak, or gloss-black finish; ported
- DRIVER COMPLEMENT:** two 5¼-inch woofers flanking two vertically aligned ½-inch fluid-cooled dome tweeters
- SPECIFICATIONS:** frequency response, 70 Hz to 21 kHz ±1.5 dB; sensitivity, 92 dB SPL; impedance, 8 ohms; crossover, 2.8 kHz; recommended amplifier power, 10 to 200 watts
- DIMENSIONS:** 19½ x 6¾ x 9¾ inches (W x H x D)
- WEIGHT:** 20 pounds
- WARRANTY:** 5 years (with registration)
- PRICE:** \$500 in oak, \$550 in gloss-black
- MANUFACTURER:** PSB, Dept. SR, 633 Granite Ct., Pickering, Ontario L1W 3K1

loss of detail from the wing chair, though it managed to keep the response trough from blatantly coloring vocals. Moving to less extreme angles improved matters greatly. The speaker sounded quite natural on vocals, if a little bright, from any location on the couch. This sealed system had its system resonance at 90 Hz, and the impedance hit a low of 6.2 ohms at 180 Hz. Like NHT, we'd call it an 8-ohm speaker. Sensitivity hit the spec dead-on at 88 dB, and the VS-2 had no trouble matching our anchor speaker bass lick for bass lick. Go with Pro Logic's Wide mode when you can.

Paradigm CC-300

Canada-based Paradigm manufactures practically all the individual parts for the CC-300, which sandwiches a 1-inch dome tweeter between a pair of 6½-inch clear-plastic cone woofers. The tweeter is actually squeezed slightly upward toward the top of the baffle to minimize the spacing between the woofers, with the goal of reducing the interference-induced response anomalies that can occur when two spaced drivers operate over the same frequency range.

The CC-300's black vinyl finish is

competently applied and attractive in its own right, but the speaker is not the queen of this hop fashion-wise. Connections are made to strapped pairs of five-way binding posts; with the straps removed, the speaker can be biwired or biamplified.

My measurements seemed to confirm the validity of Paradigm's driver layout. Response hung within a narrow ±3.4-dB envelope from 82 Hz to 16 kHz, and the woofers provided enough low-frequency output to maintain a ±5.2-dB range from 31 Hz to 16 kHz at every position on the couch. The vented enclosure was tuned to 26 Hz, indicating that Paradigm intends the speaker to be capable of working full-range. Minimum impedance was 2.8 ohms at 184 Hz, which is distinctly on the low side. Sensitivity rang in at 90 dB SPL. This baby can surely be used in Pro Logic's Wide mode in nearly any system.

At 45 degrees off-axis there was an 18-dB ravine centered at 940 Hz, but it was so narrow (probably because of the close driver spacing) that most listeners in the wing seats would never notice. This is a good example of ingenious response-error management. The sound in that position was mildly hushed, reticent, and smooth — not obnoxious at all.

Meanwhile, anyone on the couch gets excellent detail, clear and articulate vocals, and an excellent "out-of-the-box" presentation with only a mild suppression of ambience. At the end of the couch the CC-300 was nearly indistinguishable from the anchor speaker with most material. Moreover, the power-handling capability of the twin 6½-inch woofers meant that the anchor gave in to overload well in advance of the CC-300.

The CC-300's extended bass response also enables it to be deployed as the full-range speaker in a surround system using minispeakers at all other locations. Don't expect full-bandwidth dinosaur stomps, but average soundtracks and good old rock-and-roll ought to come through just fine. On the other hand, the dual woofers make the CC-300 relatively large and heavy.

PSB Stratus C5

PSB is another Canadian manufacturer that provides loudspeakers for just about every audio application. The Stratus C5 has a pair of 5¼-inch woofers flanking a vertically stacked

pair of ½-inch dome tweeters. For a center speaker, the Stratus C5 is unusually elegant in appearance. Its high-gloss black finish perfectly complements the tastefully sculpted cabinet. I actually like its shape a little better than the Snell's, and both of them leave the competition in the dust style-wise. The C5 has no user controls; connections are made to a single pair of five-way binding posts.

Like several of its competitors in this evaluation, the C5 actually had smoother midband response at the end of the couch (±2.5 dB from 92 Hz to 12 kHz) than in the center (±4 dB from 92 to 18 kHz), although it performed well from both angles. At the extreme off-axis seat, the PSB's response exhibited a wide, deep trough, but surprisingly the main sonic effect was a compression of space and dynamics rather than major spectral errors. Ambience evaporated, and the sound of some acoustic instruments became mildly hollow, but voices escaped pretty much unscathed.

The Stratus C5 was especially clean at the end of the couch, matching the anchor speaker beautifully in most re-

RDL RA LABS CENTER CHANNEL



- ENCLOSURE:** black vinyl; sealed
- DRIVER COMPLEMENT:** two 5¼-inch woofers flanking a 1-inch copolymer-dome tweeter
- SPECIFICATIONS:** frequency response, 55 Hz to 20 kHz ±3 dB; sensitivity, 89 dB SPL; impedance, 6 ohms nominal, 5 ohms minimum; crossover, 3 kHz; recommended amplifier power, 15 to 100 watts
- DIMENSIONS:** 20½ x 7 x 6½ inches (W x H x D)
- WEIGHT:** 10 pounds
- WARRANTY:** 5 years
- PRICE:** \$149
- MANUFACTURER:** RDL Acoustics, Dept. SR, 26 Pearl St., Bellingham, MA 02019; telephone, 1-800-227-0390



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spects. Directly on-axis the sound was smooth and clean, if somewhat homogenized. Voices were clear and articulate. Spatially, the C5 was a little closed-in, especially at the far wing positions.

Dynamically, the Stratus C5 had no trouble keeping pace with the anchor speaker and its 8-inch woofer — no bang, no clang, and probably okay for Pro Logic's Wide mode. Sensitivity measured 89 dB SPL, adjusted for anechoic conditions. The C5's vented cabinet was tuned to 71 Hz, and the speaker's minimum impedance was 8.1 ohms at 247 Hz, making it a true 8-ohm speaker.

RDL RA Labs Center Channel

A member of RDL's RA Labs line, the Center Channel uses a conventional horizontal woofer-tweeter-woofer configuration. It has pleasing but nondescript styling that will fit into most home theaters with little fanfare. The cloth grille covers the whole face of the enclosure, and dual five-way binding-post connectors are provided on the back of the cabinet.

The sleek black beast pumped out 91 dB SPL when driven with 2.8 volts. Low-frequency resonance of the sealed acoustic-suspension system was at 84 Hz, and the minimum impedance was 5.1 ohms at 300 Hz. Response was within ± 4.5 dB from 100 Hz to 11.5 kHz over a ± 30 -degree arc in front of the speaker, including directly on-axis. (Placement closer to a wall would extend the low-frequency response.) The overall shape of the response curve was fairly smooth, but a notch around 3 kHz got progressively worse as the angle off-axis was increased.

The Center Channel sounded fairly natural, though vocals and acoustic instruments were somewhat colored. Nonetheless, it managed to keep vocals reasonably natural even from the wing seats. There was good detail, but the speaker sounded pinched spatially. The RA Labs Center Channel had no trouble keeping pace with the anchor speaker when fed large amounts of amplifier power.

By far the lowest-priced of the speakers in this comparison, the RA Labs Center Channel represents an excellent value. Like all RDL speakers, it is available only direct from the

SNELL CC-1



ENCLOSURE: hand-sanded oak, dark-oak, walnut, or black-gloss wood veneer finish; sealed

DRIVER COMPLEMENT: two 5¼-inch woofers flanking a 1-inch textile-dome tweeter

SPECIFICATIONS: frequency response, 80 Hz to 20 kHz ± 3 dB (anechoic); sensitivity, 89 dB SPL (anechoic); impedance, 8 ohms nominal, 5.5 ohms minimum; crossover, 2.7 kHz; recommended amplifier power, 15 to 150 watts

DIMENSIONS: 16½ x 7½ x 8 inches (W x H x D)

WEIGHT: 17 pounds

WARRANTY: 5 years

PRICE: \$499

MANUFACTURER: Snell, Dept. SR, 143 Essex St., Haverhill, MA 01832

manufacturer, with a thirty-day money-back guarantee of satisfaction.

Snell CC-1

Snell gives the classic horizontal woofer-tweeter-woofer layout a clever twist. Each of the CC-1's two 5¼-inch woofers is mounted on a portion of the front panel that is angled approximately 25 degrees outward, while the tweeter faces dead ahead. This configuration worked fantastically well for all but the extreme outside listening positions.

In styling, the Snell gets my top vote in this crowd. My sample had a superb real-walnut veneer finish complemented by a graceful black cloth grille — smooth and elegant. Connections are made through a single pair of five-way binding posts. There are no controls of any kind.

Straight ahead the CC-1's output was just as smooth as that of the KEF Model 100, but it was more extended, with in-room response fitting within a 3.3-dB window from 100 Hz to 20 kHz. Response was identical 30 degrees off-axis except that the treble be-

gan falling off above 12 kHz. At 45 degrees off-axis there was a 6-dB depression from 650 Hz to 3 kHz, but the tweeter was still singing at 12 kHz.

That all added up to nearly perfect spectral uniformity at any couch position. Voices were perfectly articulated and almost perfectly natural tonally. Acoustic instruments were clean and clear. The CC-1 delivered a good but not outstanding sense of space, depth, and ambience in the main listening window along the couch.

Off-axis to the far side I noted that Snell had managed the response trade-offs masterfully. There were no major vocal or other colorations that called attention to themselves, such as singers or announcers sounding like they had permanent colds. Instead, the anomalies leaned toward a cutback of treble and the sense of space. The sound seemed limited but clean — and, naturally, we should expect the rest of the system to help us out from time to time. The main consideration for Mr. Center is to deliver the vocals without shouting.

The sealed system had its bass resonance at 102 Hz, and impedance reached a minimum of 3.7 ohms at 239 Hz. Sensitivity clocked in at 91 dB SPL. Dynamically, the CC-1 stayed right with the mains, exhibiting only mild compression at extreme volumes. Use it in Pro Logic's Wide mode when you can.

Vandersteen VCC-1

The Vandersteen VCC-1 is built around a coaxial driver that marries a 6½-inch polypropylene-cone woofer with a 1-inch fabric-dome tweeter in the same superstructure. As in the KEF Model 100, the tweeter is integrated into the space normally occupied by the woofer's dust cap. This arrangement has the advantage of producing nearly the same response at every radiating angle, and Vandersteen says that it also maintains complete phase integrity.

The VCC-1 is a 22-pound box wrapped in black grille cloth and capped with a wood-veneer panel. Mine had a neat light-oak cap, but the speaker can be ordered with a top plate to match any standard Vandersteen finish and grille color. The cabinet is almost as tall as it is wide and has thick walls with constrained-layer

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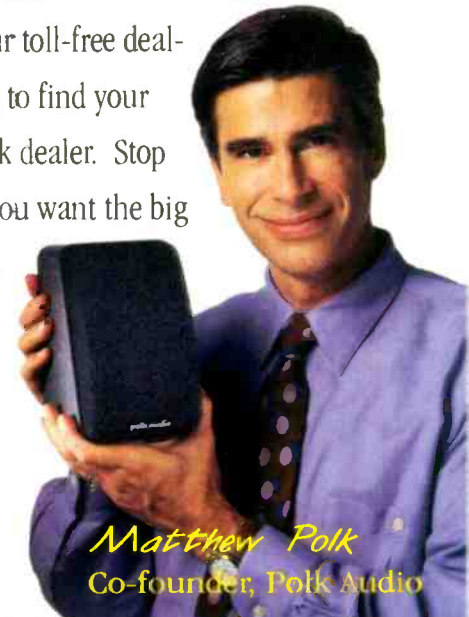
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damping. There are T-nut inserts on the bottom for spike enthusiasts and a barrier strip with slot-head screw-terminal amplifier connections on the back panel.

The VCC-1's frequency response was very good over an exceptionally wide radiating angle: ± 3.3 dB from 175 Hz to 20 kHz on-axis, with similar tolerance to 15 kHz at 45 degrees off-axis. Vandersteen also supplies a "proximity compensation" circuit — a switch that rolls off response by 5 dB below 400 Hz. The circuit is meant to compensate for the effect on the speaker's sound when it is placed next to large objects, such as a wall or a large TV screen.

Vandersteen believes that Dolby Pro Logic decoders assign too much low-frequency content to the center channel, which combines with the proximity effect to reduce intelligibility. Listening to the VCC-1 with and without compensation, I thought the circuit reduced midrange vocal content too much, making the sound too thin. The speaker actually needs a bit more low-frequency output even without the

compensation. In any case, a rear-mounted toggle switch turns it off.

At that setting, the VCC-1 sounded quite good. The lower vocal registers were recessed and very mildly colored with a faint trace of hollowness. Spaciousness was relatively limited, with most of the sound seeming to come directly from the speaker. But the performance of this speaker remained virtually unchanged even at the far left and far right listening positions, so there will be no loss of sound quality in the tough seats.

Dynamically, the VCC-1 matched the anchor speaker stride for stride. Sensitivity registered 87 dB SPL. It should be okay for Wide mode most of the time. The sealed system's crossover design delivers a very flat impedance curve up to 320 Hz (475 Hz with proximity compensation), where it measured 4.9 ohms, drifting upward to a maximum of 8.1 ohms at 990 Hz and then falling to a minimum of 4 ohms at 20 kHz.

VANDERSTEEN VCC-1



ENCLOSURE: black cloth wrap with wood-veneer top cap; sealed

DRIVER COMPLEMENT: 6½-inch woofer with coincident-mounted 1-inch dome tweeter

SPECIFICATIONS: frequency response, 150 Hz to 21 kHz ± 3 dB; sensitivity, 86 dB SPL; impedance, 5 ohms; crossover, 6 dB per octave at 3.5 kHz; recommended amplifier power, 30 to 200 watts

DIMENSIONS: 12½ x 9¼ x 10⅞ inches (W x H x D)

WEIGHT: 22 pounds

WARRANTY: 5 years (with registration)

PRICE: \$495

MANUFACTURER: Vandersteen, Dept. SR, 116 W. 4th St., Hanford, CA 93230

YAMAHA NS-AC300



ENCLOSURE: gloss-black; sealed

DRIVER COMPLEMENT: two 6½-inch polypropylene woofers flanking a 1-inch titanium-dome tweeter

SPECIFICATIONS: bandwidth, 50 Hz to 20 kHz; sensitivity, 90 dB SPL; impedance, 8 ohms; crossover, 6 kHz; recommended amplifier power, 10 to 200 watts

DIMENSIONS: 23½ x 7½ x 9½ inches (W x H x D)

WEIGHT: 21 pounds

WARRANTY: 3 years

PRICE: \$299

MANUFACTURER: Yamaha, Dept. SR, P.O. Box 6660, Buena Park, CA 90622

Yamaha NS-AC300

The Yamaha NS-AC300 has a classy gloss-black cabinet with a sloped front panel that enables it to be aimed about 15 degrees downward when the speaker is placed on top of a TV or upward if it is placed below the TV on a shelf or even on the floor. The speaker also comes packaged with a 10-foot section of polarity-coded speaker cable. A back-panel level control permits tweeter attenuation above 6 kHz to suit listener tastes.

The NS-AC300 has two 6½-inch woofers in the standard horizontal layout, one on each side of its 1-inch dome tweeter. Its on-axis response was within ± 5.5 dB from 92 Hz to 20 kHz, with a wide notch from 3 to 8 kHz. At the couch-end seats, 30 degrees off-axis, the center of the notch moved downward to about 3 kHz, and at 45 degrees it split into a pair of deeper but narrower notches, one centered at 725 Hz, the other at 2.2 kHz. Sonically that gave the main listening seats acceptable vocals and dialogue, but with a hollow, distant character and little depth, width, or detail. As we moved to the end of the couch and beyond, vocal colorations remained in check, but the sound became progressively huskier and more compressed spatially.

With two relatively large woofers,

the NS-AC300 had no trouble matching the anchor speaker note for note on electric bass. Sensitivity clocked in at a healthy 92 dB SPL. The sealed system had a resonance frequency of 96 Hz, and the minimum impedance was 5.4 ohms at 9 kHz.

Closing Thoughts

Any of the speakers reviewed here can be successfully employed for the center channel in a good home theater system. The KEF and Snell models, especially, are suitable even for very high-performance systems, particularly when matched with appropriate speakers from their own lines for front left and right duty. And those two models, along with the Paradigm, PSB, and NHT entries, will compare favorably with topnotch conventional speakers at listening positions within 30 degrees off center on either side.

For users who have extreme wing seats (like me), the KEF, Snell, and Vandersteen will deliver the goods to either side with little or no compromise. Avoid using the ADS in Dolby Pro Logic's Wide mode, which will overstress its low-frequency capabilities. The Paradigm, on the other hand, could be used as a super-full-range center with enough bass to support a system with minispeakers at the front left and right positions. □



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Since its inception, Definitive Technology has specialized in bipolar loudspeaker designs. Bipolar speakers typically have duplicate groups of drivers, facing to the front and rear and driven in phase. That configuration gives nearly omnidirectional response in the horizontal plane, with just a slight reduction in output to the sides at middle and high frequencies.

Bipolar speakers, when placed a few feet from the wall behind them, tend to add a quality of spaciousness to the sound, creating a somewhat more realistic soundstage than conventional speaker designs. In addition, the multiple drivers can handle more power than a standard configuration for a given distortion level (or, conversely, will generate less distortion for a given sound-pressure level).

Another potential benefit of the bipolar configuration is a narrower cabinet width, since low frequencies can be handled very effectively by two modestly sized woofers instead of a single larger one. That enables the designer to use a smaller panel width for a given level of bass performance, minimizing the enclosure "footprint."

But in the case of Definitive Technology's latest bipolar speaker, the BP 2000, the most distinctive (albeit virtually invisible) feature is a built-in powered subwoofer. The result is a reasonably compact speaker system with truly prodigious bass extension and output capability. That is not to say that the BP 2000 is exactly a small speaker — each one measures 50 inches high, 9 inches wide, and 16 $\frac{7}{8}$ inches deep and weighs an impressive 120 pounds

— yet it can be used effectively in almost any size room without visually dominating the decor.

Styled like most previous Definitive Technology bipolar speakers, the BP 2000 is a slender column covered with a black elastic "sock" over its full height on the front, sides, and about two-thirds of the rear panel. The top is a piano-finish, black-lacquered wooden plate that is easily removed for pulling down the cloth sock and exposing the drivers. The speaker's base is a similarly finished wooden plate. The system is also available with cherry endcaps. For a tighter contact with the floor, optional spikes are available.

Although the BP 2000 is relatively tall and deep, side placement of the subwoofer driver enables the cabinet to remain as narrow as those of most other Definitive Technology speakers, and it occupies only about a square foot of floor space. If the speakers are slightly angled toward the listening position (for optimum stereo imaging), they are surprisingly inconspicuous.

Lifting off the top plate and pulling down the grille sock reveals the driver complement. On the upper half of the front panel is a pair of 6 $\frac{3}{4}$ -inch cone woofers (their effective cone diameter is about 5 $\frac{1}{2}$ inches each) vertically flanking a 1-inch aluminum-dome tweeter in the popular D'Appolito configuration. The tweeter is offset slightly to one side of the panel's vertical midline, which may have been done as much to minimize the spacing between the woofers as for any imaging benefit. The woofers have cast-magnesium baskets and compliant rubber surrounds.

The rear panel holds an identical trio of drivers, located directly behind the front array. Definitive Technology says the cabinet interior is divided into separate enclosure volumes that give the front and rear sections slightly different low-frequency cutoff frequencies, apparently to compensate for the closer proximity of the rear drivers to the wall. The rear tweeter is also offset, in the opposite direction from the front tweeter.

The lower half of the cabinet is devoted to the subwoofer and its 300-watt amplifier. The subwoofer itself is a massive 15-inch driver with an actual cone diameter of 13 $\frac{3}{4}$ inches, mounted on the side of the cabinet. Designed as mirror-image pairs, the BP 2000 can be used with the subwoofers facing either outward or inward (the latter is recommended because of the slightly increased coupling between the two subwoofers). Incidentally, when the speaker's top is removed and the cabinet edges exposed, you can see that the side holding the subwoofer is 1 $\frac{1}{4}$ inches thick, compared to 1 inch for the front and rear panels and $\frac{3}{4}$ inch for the other side. A knuckle-rap test suggested that the structure is about as rigid as a brick or a cinder block. Although we could not see inside the enclosure, it is evidently strongly braced.

The bottom of the cabinet contains the subwoofer amplifier and its associated crossover components. Covering the bottom 15 inches of the rear of the enclosure is a metal panel with input connectors, amplifier heat sinks, a power switch, a line fuse, a sensitivity switch, and knobs for adjusting the

DEFINITIVE TECHNOLOGY BP 2000 LOUDSPEAKER

BY JULIAN HIRSCH

bass equalization and level. Price is \$3,000 per pair

The BP 200C offers a variety of connection options. It has three pairs of five-way binding posts (labeled HIGH, MID, and LOW), which accept single or dual banana plugs, wires, or lugs and are normally connected in parallel by gold-plated metal jumpers. The simplest connection uses only the wires that would normally connect your amplifier or receiver to conventional speakers. You can also biwire or triwire the speakers, with separate cables to each section, by removing the appropriate jumpers. Yet another possibility is to drive the subwoofer portion of the system from the line-level outputs of a preamplifier equipped with two sets of full-range line outputs (or Y adaptors could be used to turn each of a single set of outputs into two). Each speaker has a RCA phono-jack input to its subwoofer amplifier that can accept a full-range signal and pass it through the speaker's internal low-pass filter.

A twelve-page instruction manual describes the procedure for setting the subwoofer controls. The criteria for final adjustment are purely subjective, based on what it sounds "right" to you. In addition to the usual level control, there is a low-frequency equalization control for fine-tuning the balance between the low bass (under 50 Hz) and the upper bass (50 to 100 Hz). The procedure is not complicated, and the instructions point out that (as with separate subwoofers) there is no absolutely "correct" setting. You are encouraged to experiment with the settings to discover the one that best suits your



own taste. Normally the subwoofers of the two speakers will be set identically, but the manual points out that you can compensate for asymmetrical positioning of the left and right speakers (which could affect their low-bass performance) by using different subwoofer level and equalization settings for them.

Although the speakers have subwoofer power switches, there is no problem in leaving them energized continuously, since they use very little power at idle (we never shut them off during several weeks of use). The heat sinks never became more than faintly warm, even after extended operation at high volume levels.

For the most part, we were able to test the BP 2000's as we do all speakers. The averaged room response of the left and right speakers, based on a swept warble-tone signal, was exceptionally uniform, with several minor ripples of less than 3 dB. That smoothness was verified by an MLS quasi-anechoic measurement. Our measurements closely resembled the response curves supplied to us by Definitive Technology, which were made using a totally different procedure and in a very different environment.

A If the response curves exhibited a series of small ripples, with a peak-to-peak amplitude of 3 to 4 dB, across the range from 300 Hz to 20 kHz. Our close-miked measurement of the subwoofer's response agreed exactly with the manufacturer's data, including the effect of its equalizer control. In its middle position, which we used for listening and measurements, the subwoofer response was ± 3 dB from 23 to 100 Hz.

In the range between 100 and 300 Hz, measurements become somewhat ambiguous, since there is an unavoidable interaction with the room boundaries. Our composite response curve for the BP 2000, combining the close-miked subwoofer response and the room response, had a 6-dB peak-to-peak variation between 100 and 200 Hz, which would certainly be different (but probably present to some degree) in any other room.

The BP 2000's horizontal dispersion was typical of speakers with drivers of similar size. The output plots on-axis and 45 degrees off-axis remained close up to about 10 kHz, and then the curves diverged by about 5 dB at 13 kHz and 15 dB at 20 kHz.

The system's impedance ranged from 4 ohms between 3 and 20 kHz to 16 ohms at 20 Hz. There were peaks of 14 ohms at 100 Hz and 10 ohms at 1.4 kHz. The speaker's specifications state only that its impedance is compatible with amplifiers designed to drive 4- to 8-ohm loads, which is consistent with our measurements. There was no clear indication of the crossover frequency between the tweeters and midrange drivers in anything we measured or heard, which is actually as it should be.

The preliminary specifications for the BP 2000 include a 90-dB sensitivity rating, a bandwidth of 15 Hz to 30 kHz (!), and a recommendation for use with main system amplifiers rated between 30 and 300 watts per channel (which encompasses virtually every high-fidelity amplifier on the market).

We measured the system sensitivity at 1 meter with a 2.83-volt input of noise (equivalent to 1 watt into 8 ohms) as 92 dB sound-pressure level (SPL), slightly higher than rated. That suggests (and we verified) that the BP 2000 can be driven to lease-breaking levels by just about any receiver or amplifier, with a wide margin of reserve power. The main-system drivers had no difficulty handling all the power our test amplifier could muster in single-cycle tone bursts — 860 watts at 1 kHz into the woofers and 1,280 watts at 10 kHz into the tweeters.

We measured the subwoofer distortion with a steady-state 2.25-volt input to the system (equivalent to a 90-dB SPL system output). The distortion (largely third-harmonic) was, to our surprise, not spectacularly low, ranging from 6 percent at 30 Hz to about 2 percent at 100 Hz and higher. It climbed steeply at lower frequencies, to about 18 per cent at 20 Hz. That is not significantly different from what we have measured from some good conventional speakers that are smaller and less expensive than the BP 2000. On the other hand, the BP 2000 can be driven to truly room-shaking levels in the low bass without much *audible* evidence of subwoofer (or any other) distortion. We measured average room levels (with musical program material) of close to 105 dB in some of our listening tests.

As with any speaker, the ultimate proof of performance is in the listening. Over the years I have heard a few (very few!) speakers, usually at industry shows, that overwhelmed me and were clearly superior to almost any-

thing else I had heard prior to that time. Without exception, those speakers were *far* more expensive (by a factor of many times), and usually much larger, than the BP 2000. I never had the opportunity to live with those speakers and listen to them at length with material of my own choosing, and the specific program material plays an enormous role in one's listening impressions.

The Definitive Technology BP 2000 is the first speaker I have been able to audition in my own familiar surroundings that has given me that special thrill that usually costs ten or more times its price to obtain. When I heard it demonstrated at the 1995 Winter Consumer Electronics Show (CES) in Las Vegas, I knew it was something special, and the more I listen to it now the more that feeling is confirmed.

For one thing, driven by even a modestly powered amplifier, it can play louder than I can imagine anyone would normally want to listen, yet without audible distortion. This speaker is just loafing along at *any* level one would reasonably use in a home. The bipole configuration generates a pleasingly natural stereo stage, and the subwoofers provide a foundation that you can *feel* as much as hear.

Frankly, if circumstances allowed, I would choose these speakers for myself. Alas, space and decor considerations make that impractical. And I hate to pass up a bargain like this one! Consider what you get for \$3,000: two first-rate bipolar speakers, two 15-inch subwoofers, and two 300-watt amplifiers, all packaged in two attractively styled columns that occupy one square foot each of floor space.

I doubt that you can get a better-sounding system for less than several times the price of the BP 2000. And one more thing: You don't need exotic equipment to get high-caliber sound from a pair of BP 2000's. The speaker was demonstrated at CES with *very* high-end cables and amplifiers. I used a 75-watt receiver and 14-gauge Radio Shack speaker wire, and I doubt that an additional \$20,000 spent on that end of the system would have made any appreciable improvement. The BP 2000 is, price notwithstanding, a remarkable value. □

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HOW TO HOOK UP A SUBWOOFER

BY DAVID RANADA

Adding a subwoofer to a stereo or multichannel home-theater system is one of the best ways to improve its sound quality. It'll provide the firm low-frequency foundation on which massive musical and sound effects are built — *if* it is placed, hooked up, and adjusted properly. But there's the rub: Subwoofer placement, connection, and level setting are miserably handled by most subwoofer manuals. Last January's "Subwoofer Secrets" explored the placement question, and this article on connection issues will take you one step closer to bass bliss.

Consider a typical "full-range" speaker response, as shown by the red trace in Figure 1A on the next page. It rolls off at the lowest frequencies, which is why a subwoofer is needed in the first place. A typical subwoofer frequency response is shown by the blue trace. It rolls off at higher frequencies. The ultimate objective in hooking up a subwoofer is to arrange the frequency responses of the subwoofer and the main speakers at and around the frequency where their outputs converge — the "crossover" point — so that they combine to produce a flat overall response (the green trace in Figure 1A). If the rolloff points of the subwoofer and main speakers are too widely separated, you'll get a dip or hole in the combined response (Figure 1B), and if they are too close together or overlap, you'll get a rise in response in the crossover region (Figure 1C).

In the real world, the humped response of the green trace in Figure 1C is the most likely result if you simply throw a subwoofer into a system. In order to "force" the responses of the subwoofer and the main speakers into predictable behavior, a special cross-

over filter circuit is used. At the very least, a subwoofer crossover has a low-pass filter section (only the *low* frequencies *pass* through) that rolls off the subwoofer's high-frequency response at a fixed rate but usually with a user-adjustable frequency. The low-pass output is fed to a power amplifier, which then drives the subwoofer proper (Figure 2).

Many subwoofer crossovers also have a high-pass filter (only the *high* frequencies *pass* through) that rolls off the lows fed into the main speakers. Whether the high-pass output should be "looped back" to the main system

is a controversial point, since some people think that the main speakers should be run full-range, with no loop-back high-pass filtering. But such filtering produces several very important benefits:

- It reduces the power necessary to drive the main speakers to high levels. Looked at another way, it increases the overload margin of the main-speaker amplifiers by reducing the amount of low-frequency signal they must deliver.
- It reduces the main-speaker distortion produced by overdriving them with frequencies they cannot handle properly.



CHRISTOPHER GOULD

SUBWOOFER

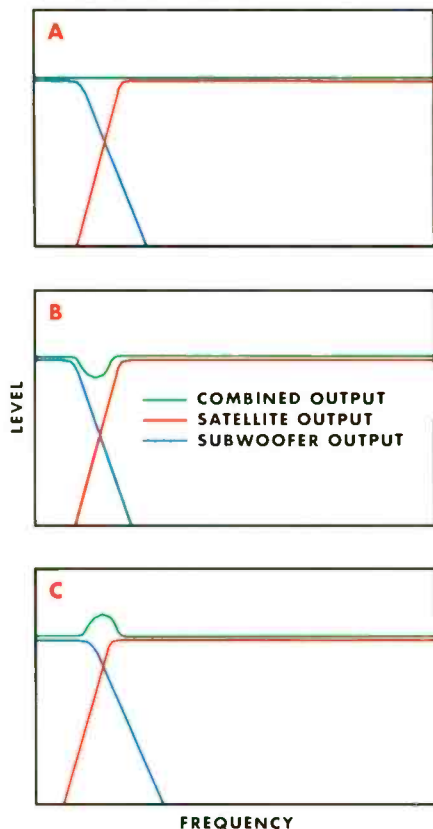


Figure 1. The subwoofer must cross over to the main speakers correctly to produce a flat overall response (A) instead of a dip (B) or a hump (C).

- It increases the chances of getting a more even overall response in a room by reducing the interference effects produced by any subwoofer and main-speaker response overlap.

On the whole, the arguments in favor of utilizing a subwoofer crossover's high-pass output make a very convincing case for trying your utmost to incorporate a loop-back connection into your subwoofer hookup. High-pass filtering is done as a matter of course by THX surround decoders and is available on other components as well. You'll also find a high-pass filter in many powered subwoofers' crossovers. High-pass filtering should be performed at line level, which complicates its use, as we'll see. Some components supply speaker-level high-pass filtering, but that can cause substantial response irregularities in the main speakers from impedance interactions unless the high-pass filter is designed to operate with that specific brand and model of main speaker.

Now for some specific subwoofer hookup recommendations. Keep in

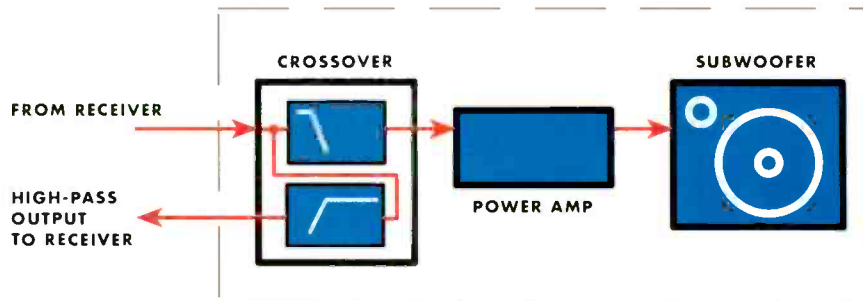
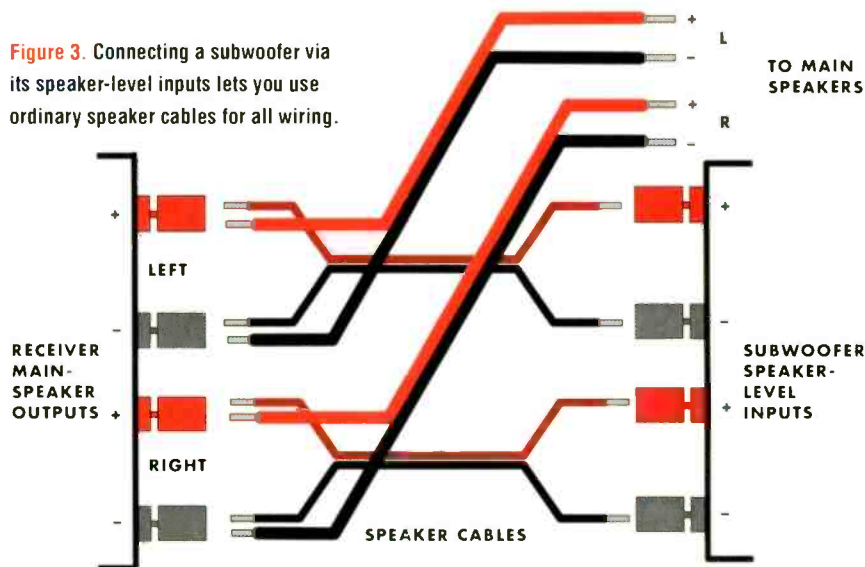


Figure 2. A typical powered subwoofer contains all of the separate elements within the dashed line.

Figure 3. Connecting a subwoofer via its speaker-level inputs lets you use ordinary speaker cables for all wiring.



mind that whenever I say "receiver," the remarks apply equally to an integrated amplifier and, usually, a preamp with the same available connections. All these components can be of stereo or A/V configuration. Also, my comments refer most specifically to hooking up a subwoofer's crossover into a system, since that is where the confusion usually arises. With powered subwoofers you don't have to worry about much else in the hookup, and a passive subwoofer requires a power amplifier connected after the crossover, a straightforward matter.

Many low-cost receivers have no line-level outputs suitable for feeding a powered subwoofer. Tape-recorder, equalizer, and similar external-processor connections, which are all at line level, won't work because they occur in the signal path *before* the volume control. Connecting a subwoofer to these line-level outputs would make the bass volume uncontrollable by the

master volume control. What's needed is to tap into the signal path after the volume control, such as at a receiver's speaker outputs. So, although it is not an ideal arrangement, many subwoofers must use speaker-level connections. One such hookup is shown in Figure 3. Note that here each of the receiver's speaker terminals (shown as multiway binding posts, but they could also be spring or snap-grip connectors) gets *two* wires attached to it; one goes to a main speaker and the other to the corresponding speaker-level input terminal of the subwoofer. Note also that it is important to preserve the phase relationships among the connections — plus terminals to plus terminals, minus to minus — but left-right channel relationships need be preserved only for the main speakers (unless you are using stereo subwoofers).

Unshielded speaker cable can be used with any speaker-level hookup. In Figure 3 the cables that run from the receiver to the subwoofer don't have to be thick or expensive. That's because the subwoofer's speaker-level

inputs draw very little current compared with a typical speaker. Besides, a subwoofer reproduces only low frequencies, and any potential cable-related signal-altering effects would occur at very much higher frequencies.

There are, however, variations on the speaker-level theme in which high-current cable should be used throughout. For example, your subwoofer may have loop-through, not loop-back, connections: a set of speaker-level "output" terminals hard-wired directly to the input terminals. You might want to use these instead of the speaker terminals on the back of the receiver in order to shorten or otherwise simplify the cable runs around your listening room. The speaker signals would then run from the receiver to the subwoofer, and from there to the main speakers. If you do use loop-through connections, all of the speaker cables, including those between the receiver and the subwoofer, should be of a suitable heavier gauge.

Most mid- to high-priced A/V receivers have a single subwoofer output carrying a sum of the left and right channels. Although this is not ideal either — it makes no use of the crossover's high-pass output — it is the simplest line-level connection to use and may prove more convenient than a speaker-level hookup. Connect the receiver's subwoofer output to the subwoofer crossover through a shielded stereo cable by using a Y connector to feed both crossover inputs with the same subwoofer signal (Figure 4). Because the subwoofer will probably be operating in mono (stereo subwoofer outputs being rare), you might think that connecting just one of its inputs would suffice. But using the Y connector to feed both inputs eliminates the possibility of picking up noise and interference from an unterminated input.

The best way to hook up a subwoofer — a configuration that will finally take advantage of a crossover's high-pass output — is shown in Figure 5. Even though it is also simple, needing only a pair of common stereo cables, this connection requires your equipment to have a set of pre-out (pre-amplifier line-level output) and main-in (power-amplifier line-level input) connections. The signal goes from the receiver to the subwoofer crossover, where it is split into high-pass and low-pass portions. The low-pass signal is amplified and sent to the subwoofer;

the high-pass signal returns through the receiver's main-in connections to be amplified and sent to the main speakers.

Unfortunately, pre-out/main-in connections seem to be rare on A/V receivers and integrated amplifiers, though not on two-channel stereo equipment. The line-level surround-decoder outputs of A/V components are not suitable. But systems having a separate preamp and power amp can use a variation of the previous hookup too — another good reason for preferring separates to receivers and integrated amplifiers. In this case, the

crossover's line-level high-pass output feeds the separate power amplifier (Figure 6).

Those are the main subwoofer hookup options. Although only single-subwoofer hookups are shown here, stereo subwoofer hookups follow the same general principles. But there is an additional subtlety to subwoofer operation that is, surprisingly, often overlooked in equipment manuals, and while it is not directly related to subwoofer hookup, it deserves mention.

If you have a separate center-channel speaker in your subwoofer-equipped home theater system, you must switch the surround-decoder center mode to Normal, not Wide or Wideband. Most low bass in soundtracks is steered by a surround-sound decoder into the center channel. Not using the Normal setting risks either losing center-channel bass altogether or overdriving the center speaker with low frequencies it can't handle without severe distortion. Using Normal mode will shunt any bass that is steered to the center by the surround-sound decoder equally to the left and right front channels, from which they will eventually reach the subwoofer. If you don't have a separate center speaker and are using a surround decoder's "phantom" center-channel setting, don't worry — the center's bass will get out. But using a separate center speaker is usually preferable (unless it is of inferior quality) because it provides superior image stability from off-center listening positions.

Normal mode must be used in all of the subwoofer hookup schemes discussed above. The only case in which it is not required is in a Home THX system (one using at least a Home THX surround decoder and a set of Home THX speakers, including subwoofers) because of the specifically matched characteristics of Home THX speakers and the crossovers supplied in THX surround decoders.

Once you've finished placing and hooking up your subwoofer(s), you can join us in contemplating how to correctly set its level and adjust its crossover frequency relative to the main speakers. These related problems are very difficult to solve without the use of special test signals and a sound-level meter. But when we come up with solutions, you'll be the first to know. □

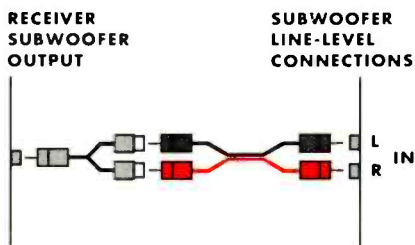


Figure 4. Use a Y connector to eliminate the possibility of picking up interference through an unterminated input.

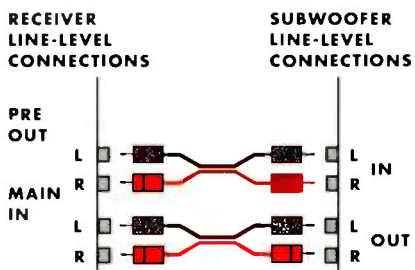


Figure 5. Using pre-out/main-in connections lets you take advantage of a crossover's high-pass filter.

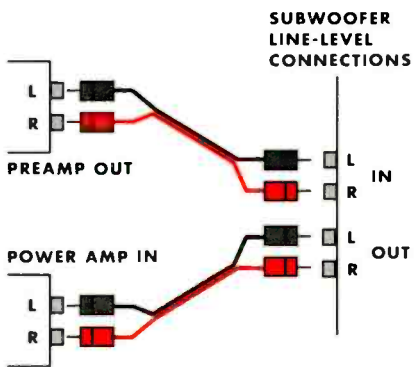


Figure 6. Systems with a separate preamp and power amplifier can also make use of a subwoofer crossover's high-pass filter.

Silver Anniversary

Back in 1970, when Gary Smith wasn't selling electronic equipment or playing rock-and-roll on his 1966 Fender Stratocaster, the 21-year-old musician/hi-fi buff was busy building speakers, making open-reel recordings, and fooling with his Heathkit oscilloscope (which, interestingly, he used as a record-level meter following the suggestions of STEREO REVIEW

made "Installation of the Month" in our August 1970 issue.

Twenty-five years and many impressive musical credits later, the audio enthusiast in Gary Smith is still going strong. Of course, the system he and his wife Leanne enjoy today in their Branson, Missouri, home is a trifle more sophisticated than the classic console setup. For one thing, it's a five-channel Dolby Pro Logic-equipped rig that's capable of transforming the

Smiths' living room into a mini movie theater.

At the heart of the system is Sony's landmark TA-E1000ESD all-digital A/V preamplifier/processor, the first of its kind when it hit the scene a few years ago. In addition to decoding Pro Logic soundtracks, it serves up nine surround modes, each of which can be customized, and provides a parametric equalizer and a subwoofer crossover. "I was looking for something that would handle all of my audio and video signals," Smith recalls. "I use Pro Logic for movies, but I don't really use all of the Sony's other

artificial reverb programs for music. I'm a purist. I prefer to listen to music the way it was recorded." And the recording studio is a second home to the 46-year-old Smith, an accomplished guitarist and recording engineer who toured with the Seventies country-rock band the Ozark Mountain Daredevils (of *Jackie Blue* fame) and has performed live or in the studio with Roy Clark, Dominick Allen (of Foreigner), Brewer and Shipley, Ray Stevens, and Pat Boone.

The Sony preamp distributes signals



From Heathkit to home theater: a longtime reader brings us up to date.

from seven source components. On the audio side are a Sony ST-S550ES AM/FM tuner, a Hitachi D-W800 dual-well cassette deck, a JVC XL-V161 CD player, and a Panasonic SV-3700 professional DAT recorder. "When I record in the studio, we mix down to DAT," Smith says. "I often bring those tapes home and listen to them to make sure the mix is right."

Audio/video signals are supplied by a JVC HR-S6700U Super VHS VCR, a Pioneer CLD-M301 combination laserdisc player and five-disc CD changer, and a new acquisition — an RCA Digital Satellite System (DSS). "I



PHOTOS BY ANNE D. MATHERS



contributor Craig Stark). The highlight of Smith's Tulsa apartment in those days was a very cool audio system: two Teac open-reel tape decks, a Marantz turntable, a Realistic AM/FM tuner, an AR amplifier, and a homemade control box/mike mixer he used to switch between a remote pair of Altec Lansing 848A's and a couple of gargantuan three-way speakers of his own design. The electronics were housed in the hutch of a buffet cabinet Smith had converted into an audio console. The setup was so hip that it



can't say enough nice things about DSS," Smith emphasizes, noting that he went out and bought the system after reading about it in these pages ("DSS at Home," January 1995). "The only time I have a problem with it is when there's a storm. Otherwise, there are very few picture artifacts. We don't go to the video store much any more—it's just so much more convenient to order a DSS movie. And we subscribe to the Music Choice digital music package, too."

After leaving the Sony A/V preamp, the main-channel audio signals pass through an Alesis Model 3630 compressor/limiter before being shuttled to an Audio-Metrics DA-8X2 distribu-

tion amplifier with eight stereo outputs. Smith is the first to admit that using a limiter/compressor in a home setting is rather unorthodox. "I use it for a little bit of what they call in the recording studio 'overeasy' limiting—it softens up harshness on the top end and makes the low end tighter. Sometimes I switch it out, but if I really want to pump up high-SPL music, it makes a big difference."

Smith uses the DA-8X2 to send balanced audio signals to systems in the bedroom and music room and to a JBL M552 electronic crossover in his main-system rack. The crossover splits the signal between a pair of Hafler Pro2400 120-watt-per-channel ampli-

fiers. The biamped signal is delivered to a pair of Tannoy System 10 professional studio monitors via 10-gauge Monster Cable. "I'm so used to using Tannoy monitors in the recording studio that I can rely on their sound for reference," Smith says. Each speaker employs Tannoy's trademark dual-concentric driver, in this case a 10-inch woofer with an integral tweeter. A pair of low-frequency Tube Traps from Acoustic Sciences Corp. (ASC) serve as speaker stands, and Smith uses aluminum Tiptoes to isolate the speakers from their stands.

The subwoofer output of the Sony A/V preamp directs frequencies below 150 Hz to a DOD Model 866 profes-

SYSTEMS

sional sound limiter/compressor, which in turn feeds a Tannoy PS-88 powered subwoofer. "I stuck another limiting device in the signal chain to tighten up the bottom," explains the recording engineer in Smith. The compact subwoofer, which sits just behind the right main speaker and to the right of the fireplace, packs two 8-inch drivers, an active crossover, and a 100-watt amplifier, and Smith says it thunders down to about 30 Hz.

The left and right surround outputs from the Sony A/V preamp are directed to a Carver C-1 preamp along with a parallel signal from the main channels. The selected signal is routed to a Hafler Pro6000 250-watt-per-channel amplifier, which drives a pair of Tannoy PBM 6.5 two-way studio monitors featuring a 6½-inch woofer and a 1-inch tweeter. "These act as rear surround speakers, but they can also be switched to see the same signal as the front speakers," Smith says. "If I'm

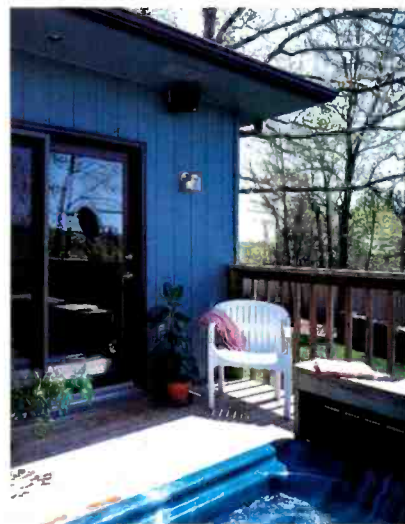
is powered by a spare Hafler Pro1200 65-watt-per-channel amplifier that's bridged to 150 watts mono for this application. A second Pro1200 amplifier (the one shown in the main-system rack) is used to power a pair of Advent in-wall speakers in the adjoining family room/kitchen area and a pair of weatherproof Electro-Voice S-40 studio monitors outside on the eaves above the deck and hot tub (photo at right). Switching is done via a home-made box.

Down the hall from the living room is the music room — a cozy recording studio built around an Alesis ADAT eight-track digital recorder that uses S-VHS videotape as the recording medium (photo on page 78). The studio is where Smith spends much of his time. That's where he did all of the soundtrack recording and video editing for two fishing videos he produced earlier this year, for example.

To play back works in progress, Smith uses a Yamaha CDX-900U CD player, his favorite Hafler 250-watt-per-channel DH 500 power amplifier, and a pair of Acoustech Model 8025 two-way studio monitors. Each of the speakers sits on top of a midrange Tube Trap from ASC. The amp is tucked away in a nearby closet to squelch the noise from its internal fans.

The component rack is loaded with professional studio gear, including a DOD Model 1222 twelve-channel mixer, two Pro-Co forty-eight-point patch bays that facilitate myriad signal-routing possibilities, two Model 4001 one-third-octave equalizers from White Instruments, a Lexicon LXP-1 effects unit for vocals and instruments, and a Fishman acoustic-guitar blender Smith uses during live performances. Rounding out the collection of toys in his playroom are a couple of Smith's prized guitars — the Strat and a Taylor acoustic — and two Mesa Boogie guitar amplifiers.

Even at the end of a long day, Smith likes to keep the music flowing. In his bedroom you find a nice little system (see photo above) consisting of another Carver C-1 preamp, a Pioneer DM502 six-disc CD changer, two DOD Model 831 one-third-octave equalizers, yet another Hafler Pro1200 power



amp (for a total of three), and a pair of E-V Sentry 100A — you guessed it — studio monitors. "Many records were mixed using Sentry 100A's," Smith says of the two-way speakers. "In the Seventies and early Eighties, they were a staple in recording studios." Each of the Carver's outputs passes through a DOD EQ on its way to the Pro1200. If Smith wants to listen in on whatever source is playing in the living room or the music room, all he has to do is switch inputs on the C-1. A Sony KV-27TS27 27-inch TV completes the nocturnal lineup.

What kind of music does Smith like to listen to? "Classics like the Doobie Brothers, Clapton, Spencer Davis," he says. "One of my all-time favorites is Michael McDonald [of the Doobie Brothers]. I'm into pop and contemporary jazz, too. I like Bonnie Raitt and Donald Fagen. I was raised in the Motown era, so I also have a real appreciation for R&B."

Although Smith has never stopped to figure out his net A/V worth, he reckons that all of the gear he has collected over the years would add up to at least \$35,000 — and probably more. "I've always had equipment around me," he says. "I know my wife wishes I would quit, but it's actually a fever. Not a day goes by that I don't have one of the systems on, and I'm always looking for ways to improve them." In fact, his latest improvement scheme calls for a 1,200-square-foot addition off his living room to house a full-blown home theater, complete with a Vidikron front-projection system. "Audio has certainly come a long way since my system showed up in STEREO REVIEW the first time."

—Bob Ankasko



listening to something critically, I'll turn the subwoofer and the rear speakers off. But when I'm entertaining, I'll crank the subwoofer up and turn on the rear speakers as an extra set. And when I want to really get it on, I crank up the compressor to bring up the low-volume passages."

Music comes first in this household, so when it's time to watch a movie, Smith pulls out an extra Tannoy PBM 6.5 and sets it on top of his 31-inch JVC TV. The part-time center speaker

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**Stereo Review, Audio,
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Home Theater Technology,
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S-90

...response, from 500 Hz to 20 KHz, was among the flattest we have ever measured...."—*Stereo Review*

S-5000 and MX-5000

"I had much fun with the M&K's loud and clean capabilities, their effortlessness, and the vast quantities of clean bass they can generate."

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"Extremely clear, with lots of detail and ambience"

"'A' for Sound Quality"—*Sound and Image*

S-90/MX-90

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CIRCLE NO. 37 ON READER SERVICE CARD

HOW TO GET A SURROUND SOUND HOME THEATER FOR JUST \$99....

Confused about home theater? It's no wonder with all of the hype on the subject. The simple truth is, you don't need an expensive Dolby® or THX® decoder to get great sounding Home Theater. Chase's award winning 5 channel HTS-1 Decoder works with your existing stereo, is easy to use, and even makes "Wireless Home Theater" a reality at last!

By Bob Rapoport

If you bought your stereo system in the 70's, 80's or even the 90's, there's a good chance it still works great, but does not have surround sound. In order to have a true "Home Theater", you need more than just a big screen; you need 5 speakers which surround you, bringing the movie to life right in your living room, just like they do at the movie theater. But more than that, you need a decoder that separates the front signals from the rear signals, and creates a special "dialog" channel. The Chase HTS-1 Decoder does just that, and does it in a revolutionary way that rivals even the most expensive Dolby® Pro Logic THX® systems!

HOW IT WORKS

The videotape version of the movie has a stereo soundtrack with only two channels of sound, left and right. The rear channel surround signal is "matrixed" into the soundtrack out-of-phase with the main stereo signal. Back in the late 1960's, legendary audio designer David Hafler originated a method for passively decoding matrix encoded audio signals. The Chase HTS-1 uses the same basic "de-matrixing" technique, while at the same time adding a line level center channel output, and discrete line level outputs for the rear channels, making it the world's first "hybrid" passive/active decoder.

Like the original Hafler decoder, the HTS-1 allows you to drive both the front and rear channels with your existing stereo amp as well. Now here's the important part; all pro-logic decoders are matrix decoders too, except they are "active". meaning they use signal processing to do the same thing, adding noise and distortion to the sound. They also cost more because you have to buy an additional amp. The full bandwidth HTS-1 decodes "passively". so it adds absolutely no noise or distortion, and sounds totally natural at all times, on music and movies.



The "DIALOG" powered center channel is a "Point Source Design", and is shielded so it won't distort your TV picture.....\$75

THE CENTER CHANNEL AND WHY YOU NEED IT

One of the speakers at the movie theater is placed behind the screen, in the center. This speaker keeps voices and certain special effects locked on-screen. In a home theater system, using a center channel does the same thing, adding impact to the special effects, and localizing voices. Since the stereo soundtrack does not contain a dedicated center channel, the Chase decoder extracts the sum of the left and right channels, known as

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The ELF-1 is a perfect "POINT SOURCE" style rear channel effects speaker, clearly out-performing all of the Bi-Polar designs when it comes to localizing off-screen sounds..... just \$99 per pair including brackets.

the mono signal, and directs it to a center channel output on the decoder. This channel does have to be amplified separately, so Chase makes a special self-amplified center channel speaker called the "Dialog". It's built-in amplifier has just the right amount of power to amplify the mid-range voice signals and on-screen special effects, without ruining the hi fi reproduction of the music in the movie.

AWARD WINNING DESIGN



At the 1994 Summer Consumer Electronics Show in Chicago, the HTS-1 won the Design and Engineering Award for being one of the best and most innovative new products of 1994. This award-winning design from Chase Technologies is a breakthrough for it's ease of use, affordability and outstanding performance.



The award-winning HTS-1 Decoder

WIRED AND WIRELESS REAR CHANNEL OPTIONS

One of the biggest obstacles to setting up a home theater system is how to get the sound from the front of the room where your stereo system is usually located, to the rear channel speakers which should be located above and behind your listening position, just like they are at the movie theater.

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CIRCLE NO. 17 ON READER SERVICE CARD

Kubrick's Bone

BY ERIC SALZMAN



ILLUSTRATION BY MARGARET RIEGE

A CENTURY OF MUSIC AND TECHNOLOGY

TWENTIETH-CENTURY technology has a lot to answer for.

This has been the century of mass warfare and mass murder. But it has also been the century of mass media, of pop and avant-garde art, almost all of it produced with or vastly assisted by contemporary technology. It is the audio century as well as the film and television century, the age of art as entertainment, entertainment as art, and both as information. For better or for worse, most musical experience now takes place through loudspeakers and headphones. We live in the Age of Amplified Music, and, as the millennium winds down and the information age gears up, it seems like a good time to take stock.

We are awash in amplified sound — sound that passes

through loudspeakers and headphones. It has become such an integral part of our life that we don't even think about it, but most musical experience is now filtered through the technology that has established itself at the center of musical life. Amplified sound is the economic and aesthetic heart of musicmaking; it is (to change the anatomical metaphor) the tail that wags the dog.

Some people like to think of technology as neutral, an impartial transmitter that puts out, in an increasingly faithful manner, what goes in. But fidelity, faithfulness — note how the metaphor suggests the passions of a love affair — are only part of the picture. Any medium affects the thing it transmits and how it is received. Audio technology, if only

Kubrick's Bone

because it has brought about such a huge social change, alters our attitudes about music and our ways of listening to it and making it as well. There is no music that has not been affected.

In Stanley Kubrick's *2001*, one of our brutish ancestors beats a rival to death with an animal bone and then, in his murderous euphoria, tosses it up in the air. Suddenly, thanks to the magic of film technology, the eons melt away and what went up as a crude weapon comes down as a space ship waltzing through the heavens to the strains of *The Blue Danube*. In my music-theater version, that bone would be a flute (bone flutes are found in hundreds of ancient burial sites) and it would come down as a synthesizer or CD player blaring out sampled Strauss.

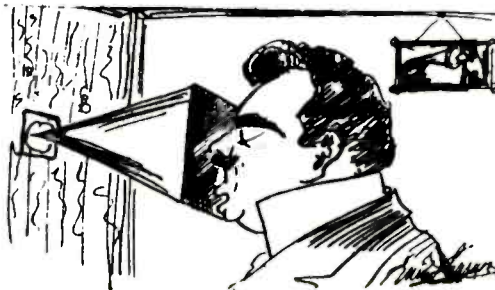
The marriage of technology and music is nothing new. The very term *instrumental* music says it all; man is a tool-making animal, and musical instruments, primitive or sophisticated, are all tools. When one of our neolithic ancestors began to beat out a rhythm on a hollow log or to pipe a tune on that bone flute, he — or she — was right at the cutting edge of new technology. What is a grand piano but a music machine? It even has a keyboard, just like a computer. The keyboards, winds, brass, and percussion of the Romantic orchestra are all products of industrial technology.

Traditional music is passed on aurally and orally, by ear and through the relationship of master and pupil. The technology of writing and printing changed all that; we talk about the "score" as if it were the music itself. The German Romantics thought that music was the purest of the arts because the "real" music was not the flawed result of the efforts of a bunch of huffers and puffers, scrapers and bangers, but the idealized score on the page, which was itself a direct reflection of the inside of the composer's mind. This quite antisocial view of music, still current in some quarters, is a good example of how technology and media affect our ways of thinking and hearing.

But both technologies *and* ideas can change. Recording is the modern equivalent of publication, and computers can bypass or redo the old hand-written or printed "score." As old ways of doing things are replaced by

new ones, other modes of doing, hearing, and thinking inevitably follow. What written and printed music were to the past, recorded music is to the art of today.

When Edison added a wax cylinder to Bell's telephone, modern sound recording was born. The bumps and grinds of a groove cut into a revolving wax cylinder or platter by a needle or stylus were to remain the basis of sound recording for three-quarters of a century. Microphones, amplifiers, and loudspeakers, developed for radio



Technology tossed up at the start of recording . . .

broadcasting, also became essential ingredients of both recording *and* live performance. All three media interacted, sharing the same technology and similar aesthetics from an early date.

By midcentury the pace of change had increased. Tape became the primary medium for recording. Two-track stereo sound, introduced in pursuit of the ideal of audio fidelity, reflected the fact that human beings live in a stereophonic world, with two sets of aural information mixed and processed by the brain to produce three-dimensional sound. The advent of tape sparked a competition between disc and tape for the home audio market that led to the development of the extended or long-play record and tape cassettes. The stereo LP later succumbed to the compact disc, while the cassette, though still selling briskly, began losing ground to it.

Sound reproduction, which once lagged behind the visual, moved out to the leading edge of technological innovation. The high-fidelity movement dissected the sound system, breaking it up into smaller and lighter mix-and-match components that were high in quality and consistent in performance. Many of these innovations came not from big corporations but from garage tinkerers with a love of music, primarily classical. The vacuum tube was replaced by the transistor, and dramatic new developments in the range and fi-

delity of microphones and speakers were introduced. High-end equipment, originally the province of well-to-do audiophiles, began to reach a larger and larger public and influenced even mass-market commercial design.

All these developments were about that elusive goal of authenticity, or "realism," in musical sound. But the vogue for recordings of the Indianapolis 500 did not last long; it was the taste for hi-fi Beethoven, Vivaldi, and Mahler that spurred the market. Pop music, not being concerned with such lofty matters and long mired in the low-fidelity aesthetics and economics of AM portables and car radios, crossed the high-fidelity sound barrier only when pop recording became a creative form in its own right and the pop album came into its own.

Before the 1960's, classical, contemporary, jazz, and pop music were all recorded in essentially the same way and with a similar basic recording aesthetic; then they began to diverge. One of the great advantages of tape is that it can be cut and spliced. Classical musicians, ever in pursuit of musical perfection, took to this technique, and the composite, edited performance became the norm. A new kind of virtuoso appeared: the virtuoso of the recording studio, performers who specialized in recording music in sections that could be seamlessly edited together, giving an illusion of technical perfection. There is a famous story about Pianist X listening to a radio performance of a concerto in the company of conductor George Szell. They were trying to guess the name of the pianist; it was, of course, Pianist X himself. "Don't you wish," said the sharp-tongued maestro without losing a beat, "that you could play like that?"

The impact of recorded music on classical performance should not be underestimated. Toscanini's early interpretations were not particularly fast; the clarity and driven quality of his later performances are perfect examples of the effect of working almost exclusively in the broadcast and recording studio. The new Neoclassicism — fast, straight, virtuosic, note-perfect, anti-Romantic — comes from a generation of performers driven to produce something not of the moment, not quirky or personal, but for all time.

The public for classical music was originally the public for concert and operatic performances, and the reper-

toire was accordingly restricted. In the LP era, however, a new record-buying public appeared that was no longer merely an extension of the concert audience, and that public began to find its own repertoire, often leading to changes in taste that later penetrated the concert world. The first and most noticeable result of this was a major leap backward into musical history. By the 1960's, recorded repertoire was no longer confined to the standards, and the early-music movement was born. Starting with the Rococo and Baroque revivals, the taste for old-music recordings eventually worked all the way back to Gregorian chant. It is one of the great paradoxes that modern technology helped foster interest in early music and played a major role in creating and popularizing the period-instrument movement — a remarkable example of the pre-industrial getting a boost from the post-industrial.

Unusual music of more recent vintage also benefited from being circulated in recorded form. The new popularity of Ives and Mahler was as much a product of the Amplified Age as the Vivaldi and Monteverdi revivals. New music, even of the most avant-garde sort, found a public through recordings, and new musical trends began traveling around the world with extraordinary speed. The taste of the music world has moved forward to Cage, Gorecki, and Glass as well as backward to Pachelbel, Charpentier, and chant.

Part of the reason for this diversity has to do with what advertising people call niche marketing. This concept, much talked about today in the computer world, actually goes back to the early days of pop recording. In addition to the star vocalists and the big-name jazz and swing bands, there were recordings that served minority tastes, and it is to niche marketing that we owe much recorded early black music, from the blues to the race records of the 1940's and 1950's, the source of rock-and-roll.

The advent of tape and the miniaturization of equipment made location recording cheaper and more dependable. Jazz could be taped live in its proper club and concert habitat. Traditional music could be recorded in Balkan villages, on the slopes of the Himalayas, in the Arctic or the rain forest. Music from anywhere — any natural or man-made sound at all — could be recorded and preserved. The notion of

"world music," of the musical global village, rapidly became a reality, and the taping of the world is a project still in progress.

At another extreme, it became possible to make new music by creating, mixing, or editing sound directly on tape, presenting us with the paradox of recorded music that is not a recording of anything. After World War II, no European radio station or American university was complete without an electronic-music studio, and whole schools of experimental tape and com-

which the basic rhythm tracks have been laid down: the other parts are then added by overdubbing, track by track. The definitive vocals may be put on only near the end of the process, although some fussy artists and producers can go on adding "sweetening" almost indefinitely. Finally, the multiple tracks are elaborately merged, shaped, and colored through gigantesque mixing boards specially developed for the task.

Detractors claim that multitracking is a crutch for musicians with limited abilities. Different tracks can be recorded and then rerecorded as time and money permit. Ringers can be brought in to clean up a mess or add new elements. An important part of the mixdown comes from the almost endless possibilities for manipulating the sound of each individual track. Effects ranging from simple echo to vast tonal alterations are added through a whole new technology of sound mixing and modification. The final result may, in fact, be completely unlike anything that can be produced in a live performance.

The ascent, diffusion, and impact of musical technology, and of recorded music in particular, has been steady throughout the century. If we include radio music (mostly based on recorded music), we can say that recorded music reaches almost every person in this country and a very high percentage of the people on the planet. Free trade in recorded music has existed for a long time, but its pace has been accelerating enormously, and it has internationalized music culture to a substantial degree. Only now, at the millennium, does that old saw about the universality of music bid fair to come true.

This is only the beginning of the story. Technology has invaded the once sacrosanct domain of live performance and is now a dominating element in the performance of almost every kind of music. Even the exceptions, traditional classical and folk, for example, have been influenced by audio technology. And we are just at the very beginning of the computer/digital age, which promises to bring a whole new wave of change to musical life.

One thing we can say for sure: Toss the bone up in the air, and it will come down. Consequences there will be. The age-old love affair of art and technology is an enduring and fruitful relationship, and as passionate today as it was in neolithic times. □



... has come down as today's multitrack studio.

puter music evolved out of the available equipment of the day.

Pop music, way behind in the audio department, began to catch up fast. With few traditions or inhibitions to hold it back, pop began an infatuation with technology that turned into a love affair. Rock-and-roll had little interest in audio fidelity, but it was devoted to amplified, electric sound, it was anti-traditional, and it prized creativity. For the first time, the recording became the original, and the live performance was the copy instead of vice versa.

The most important technological contribution of pop musicians and producers was multitracking. Two different techniques came together here. One involves adding elements layer by layer, track by track, to build up a giant multitrack master tape by accretion. The other is the technique, originally developed in live performance, of merging multiple inputs to create the mixdown. As some wag once said, "Music expands to fill up the tracks available to it." The expansion was geometrical: two, four, eight, sixteen, thirty-two, and up.

In a typical classical recording, everything is recorded straight by the whole ensemble many times over. The best sections from the different takes, plus patches and inserts, are then spliced up to create a master. On the other hand, multitrack pop recording starts with a multitrack master on

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CIRCLE NO. 4 ON READER SERVICE CARD

BEST OF THE MONTH REVIEWS

STEREO REVIEW'S
CRITICS CHOOSE
THE OUTSTANDING
CURRENT RELEASES

Van Morrison: Not Fade Away

A hype-resistant artist, gruffly and gamely preoccupied with pursuing music as a means of personal and spiritual growth, Van Morrison is a paragon of soul in all senses of the word. He has toiled at his craft for three decades now, and in his latest work, "Days Like This," his music remains compelling and connected, his words demanding to be heard.

The album's undercurrent is Morrison's inability to experience happiness, a theme he develops without self-pity. "Ain't nothin' but the blues," he allows in an offhanded manner (in *Underlying Depression*), as if to say his suffering is part of a human continuum that makes him no more or less special than any other person with a headful of blues. But beyond Morrison's admission of malaise — a noble attempt to bring a hush-hush subject into the pop mainstream — "Days Like This" contains some of the most impassioned performances of his career.

There is no finer composer of horn charts than Van Morrison. Here, they color the edges of *Melancholia* with a bitter-sweet shade of blue, give *Perfect Fit* its lean drive, and work hand in glove during the call and response of *No Religion*, where Morrison matter-of-factly laments the lack of conviction in modern society as it slouches toward Bethlehem. He continues to collaborate with organist George Fame, whose Blue Note-style jazz/soul voicings are integral to Morrison's current music, and with guitarist Ronnie Johnson, whose limber, clear-toned, single-note lines subtly counterpoint Morrison's vocal wanderings.

Stylistically, "Days Like This" is very much of a piece with Morrison's recent work, but there is at least one new wrinkle: the frequent use of female singers (including his daughter Shana), deployed as if to reinforce a universality of feeling that cuts across gender. Often the strategy works, though Morrison is so singular a singer that his duet partners don't always find a convincing spot for themselves, notably in *You Don't Know Me*, a cover of a song made famous by Ray Charles, and *Never Be Free*, a cabaret-style original that fails to nail its bluesy-swinging groove. Still, this is very much a singer's



album, and Morrison himself is awesomely on top of his game in songs like *Ancient Highway* and *Raincheck*. In the former, he mounts a *Listen to the Lion*-type growl for nine amazing minutes over enticingly abstract music that recalls the moodscapes of "Astral Weeks."

Raincheck, meanwhile, is an instant classic, evoking the transcendent, deep-soul lyricism of Morrison circa "Moon-dance." Its happy/sad poetic-musical tapestry is of a supplicant trying to shake free of earthly shackles: "I got to stand my ground / I'm gonna keep on movin' on up / I want to stick around / Won't let the bastards tie me down." Against a

backdrop of gauzy horns, skittering guitar, and jazzy percussion accents, he asserts, "I won't fade away / I don't fade away / Unless I want to."

And that's the last word on that subject — at least until Van Morrison's next one.

Parke Puterbaugh

VAN MORRISON Days Like This

Perfect Fit; *Russian Roulette*; *Raincheck*;
You Don't Know Me; *No Religion*;
Underlying Depression; *Songwriter*; *Days Like This*; *Never Be Free*; *Melancholia*;
Ancient Highway; *Love in the Afternoon*
POLYDOR 527 307 (58 min)

Spontaneous Combustion: Pires's Chopin

Rachmaninoff is said to have asked sadly, after hearing a performance of one of his piano concertos, how the soloist "could have put so little of herself into it." No one could make such a comment about Maria-João Pires's new Deutsche Grammophon recording of Chopin's Concerto No. 2, in

F Minor, with the Royal Philharmonic under André Previn. This is one of those exceptional performances that show us how fresh even the most familiar music can be made to sound — and without in any way distorting the shape or substance that *made* it so familiar.

Pires has apparently rethought every

phrase of the work, and yet it all comes out with phenomenal spontaneity. She never allows her own personality, vivid though it is, to obscure the essential spirit of Chopin; nothing in her playing suggests she is out to "improve" upon what he set down. She is simply out to vivify the music, and that she does, with clarity, with imagination (the sort of freedom Chopin himself might have encouraged), and with incredible resources of color. While the solo playing is indeed a marvel, Pires is not out there all alone. Previn's contribution is not diffident "accompaniment" but a genuine, full-scale partnership that plays off the pianistic impetus with the sort of cumulatively build-



CHRISTIAN STENBERG/DCS

Pianist Maria João Pires

ing give-and-take you always hope for in a concerto performance but may not expect in the concertos of Chopin.

Instead of filling out the disc with the other Chopin piano concerto, Pires follows up with something just as grand in another form, the Twenty-Four Preludes, Op. 28. In many respects these performances are even less traditional than that of the concerto. There is little of the salon and its muted candelabras here; reticence is simply not a part of the plan, which favors the most direct confrontation with the dramatic substance of each prelude on its own terms, whether intimate or proclamative or whimsical. This is music-making that really does defy verbal description. To compound the pleasure it affords, DG's recording teams have surpassed themselves, too. *Richard Freed*

CHOPIN:

Piano Concerto No. 2; Preludes, Op. 28

Pires; Royal Philharmonic, Previn cond.
DEUTSCHE GRAMMOPHON 437 817
(74 min)

Final Curtain For the Ramones?

The Ramones' "Adios Amigos" is... yeah, it's da new Ramones album, what else ya wanna know? Gabba gabba hey, take it Joey, take it C.J., one-two-three-four...

Now hold on just a minute. Yes, this is a typical Ramones album, but it's also a little special. For one thing, it may be their last. Nobody's confirming or denying rumors of an imminent breakup, but the title doesn't exactly bode well. After twenty years, a world without the Ramones is hard to imagine, but at least they're not going out with a turkey.

The commercial revival of punk rock seems to have revitalized the band. In recent years they've absorbed a few passing trends — hardcore, metal, even psychedelia. But now, with bands like Green Day and Rancid jumping their train, the Ramones are back sounding like the Ramones. And make no mistake, "Adios Amigos" sounds *exactly* like the Ramones: Drummer Marky has got that snare-drum *thwap* down to an art, guitarist Johnny hammers away at the usual three chords — but hey, they're the three *best* chords — and Joey's voice, while it's deepened over the years, remains as Noo Yawk and as oddly endearing as ever. There's a second capable singer here, too, in recently added bassist C.J., whose youthful brattiness makes the ideal counterpart to Joey's grown-up brattiness.

Along with a spiffy cover tune by punk icon Johnny Thunders, the lads have a stack of new songs that show their mastery of so-dumb-it's-great. You want relevance, listen to *Have a Nice Day*, where Joey rants about how everyone he

knows insists on saying that damn phrase. Or *Makin' Monsters for My Friends*, where C.J. sums up his worldview with these resonant words: "I don't want any Spaghetti-O's." Or *She Talks to Rainbows*, about the eternal dilemma of a punk falling in love with a hippie.

True, there's some semi-serious stuff here, too: *Take the Pain Away* is a surprisingly convincing protest song, and *I Don't Want to Grow Up* — by Tom Waits, of all people — is a clear-cut statement of purpose. But whether or not it becomes the Ramones' career headstone, "Adios Amigos" is, above all, a quintessential summer album. *Brett Milano*

RAMONES

Adios Amigos

I Don't Want to Grow Up; Makin' Monsters for My Friends; It's Not for Me to Know; The Crusher; Life's a Gas; Take the Pain Away; I Love You; Cretin Family; Have a Nice Day; Scattergun; Got A Lot to Say; She Talks to Rainbows; Born to Die in Berlin
RADIOACTIVE/MCA 11273 (35 min)

A "Medée" For Our Time

William Christie, an American in Paris who has almost single-handedly restored the grandeurs of French Baroque opera, has a fair claim to having rediscovered Charpentier's *Medée* and brought it back to life. When he switched record labels from Harmonia Mundi to Erato, he could not resist the opportunity to rerecord *Medée*, which he considers the masterpiece of one of the greatest composers of the Baroque period. He

The Ramones: three chords and a cloud of dust



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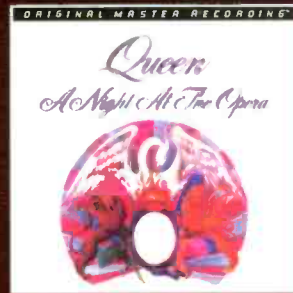
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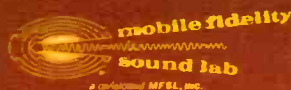
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BEST OF THE MONTH

points out in the notes to the new set that his earlier version had to be trimmed to well under three hours to fit on three LP's; the new one is complete on three CD's. He also argues that he and his group have come a long way since 1984 and have learned a lot about performing this music. Christie's old *Medée* was a concert reading, the new one a dramatic performance.

Marc-Antoine Charpentier, born in Paris in 1643, combined Italianate melody and theatricality with French style in form, orchestral writing, and ornament. French opera was invented by Louis XIV's court composer, Jean-Baptiste Lully, and after his death in 1687, the royal



LUC CHOQUER/METIS/ERATO

Conductor William Christie

job was up for grabs. Charpentier was perhaps the leading candidate, and *Medée*, presented at the Académie de la Musique in 1693 and dedicated to the Sun King, was his demo piece. Clearly, he extended himself to produce a Lullian opera, complete with a fawning prologue extolling the king's virtues, diverting set pieces, lots of dancing, colorful costumes, unabashed expression of emotions, and plenty of spectacle, culminating in the scene in which Medea conjures up the demons of hell to help her get revenge. But all Charpentier got was a pat on the head from the king, who did not hire him, and after one revival at Lyon in 1700, his masterpiece was put away and forgotten.

The theme of *Medée* is anger and revenge; the central character is a strong and violent woman, a foreigner, and a witch — who, not incidentally, despises

royal authority. She not only humiliates Jason but laughs at King Creon's protestations of authority, literally driving him mad. Perhaps this was not a message that Louis XIV wanted to hear, but these are the qualities that make the piece so fascinating today. By infusing his work with dramatic, emotional, and perhaps even political intensity, Charpentier may have exceeded the bounds set by royal patronage, but from a modern point of view, there is hardly a misstep in his setting: the light and flirtatious scenes between Jason and Créuse; her banter as she parries the unwanted advances of the dweebish Oronte; the scene where dim-witted Oronte finally realizes that he is being had; Creon's unctuous tone as he tries to get rid of Medea, finally turning to anger and then madness; the choral lament at the news of his death; the colorful scenes of wrestling warriors, simpering cupids, vengeful demons, and seductive temptresses; the *Götterdämmerung*-like destruction of Corinth at the end. Above all, there is the musical depiction of Medea as she slowly turns from devotion and confusion to resolution and righteous anger. This Medea must be ranked with the very greatest operatic heroines.

Soprano Lorraine Hunt is a wonderful Medea. Like William Christie, she is an American with a big career abroad. She proves that a feeling for style hardly precludes a vocal and dramatic expression of great intensity; quite the contrary, she grasps that the Baroque vocabulary as used by Charpentier is a language of the emotions. Mark Padmore, in the role of Jason, is a high tenor with class.

As always, Christie has made an outstanding cast out of a group of singers who, aside from the leads, do not have conventionally exceptional voices; many of them are Christie regulars, and he has melded their performances into a series of exquisite solos and ensembles. The early-instrument orchestra is magnificently integrated with the singers so that stage and pit seem to constantly react and interact.

You will rarely hear a dramatic work treated with as much depth and passion as this — for one thing, no standard repertory and few contemporary operas get this level of care, immersion, intelligence, and knowledge wedded to passion. After 300 years of neglect, the operatic Charpentier is in good hands.

Eric Salzman

CHARPENTIER: *Medée*

Hunt, Padmore, Deletré, Zanetti, Salzman; Les Arts Florissants, Christie cond. ERATO 96558 (three CD's, 135 min)

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Elastica: reinventing the pop-rock wheel for the Nineties

BABES IN TOYLAND
Nemesisters

REPRISE 45868 (57 min)

Performance: Good, but . . .
Recording: Good

In most cases, an album like "Nemesisters" would be cause for rejoicing. It's got toothsome songs, a rough-and-nasty guitar sound, and an even mix of smarts and snarl; at times it sounds like the album Joan Jett's been trying to make for years. *Oh Yeah!* has a great shout-along chorus. *Drivin'* has an effective mantra-like repetition of one lyric line, and *Surd* matches lovely harmonies (a first for this band) with a surf-guitar riff (ditto). The single *Sweet '69* would make a perfect segue into R.E.M.'s equally garagey *Star 69*. And if you overlook a pair of jokey Seventies covers — by now, a hackneyed gambit — this album is a solid example of radio-acceptable Nineties punk rock.

So why is "Nemesisters" ultimately so frustrating? Because Babes in Toyland did something much gutsier the last time around. "Fontanelle," their major-label debut, was as raw a statement of rage as rock

has produced lately, the music a female band might make if Operation Rescue were demonstrating next door. Its screaming vocals, provocative words, and grisly sound all went beyond respectable boundaries. "Fontanelle" was an exciting, maybe even dangerous album; "Nemesisters" sounds a little better and matters a little less.

Brett Milano

ELASTICA

DGC 24728 (40 min)

Performance: Mixed
Recording: Appropriately low-fi

There's something captivating about Elastica — the unselfconscious abandon of a band staging a melodic noisefest à la Blondie in the early days of Max's and CBGB. As Blondie and some of its peers did in the late Seventies, Elastica is essentially reinventing the pop-rock wheel, this time with a patina of pouty Englishness and the judicious use of samples and such. Tasty morsels like *Line Up* and *Connection* are sly, catchy, and danceable, the perfect equation for clubland fun in the Nineties. *Car Song* is a sleek and sexy model, a won-

drously cool and seductive come-on that will no doubt contribute to condom sales: "I hardly know you / But I think I'm going to," coos Justine Frischmann, and the libido that doesn't accelerate after that is simply out of gas.

Unfortunately, "out of gas" all too accurately describes a fair portion of these sixteen (!) songs — another instance where the expanded CD format does musicians no favors. When "Elastica" clicks, however, and it does about half the time, it's very addictive indeed. P.P.

BETTY ELDERS

Crayons

FLYING FISH 40642 (61 min)

Performance: Delicate
Recording: Good

Austin native Betty Elders may be best known to some as the writer of Kathy Mattea's *Bed of Roses* and co-writer of Lucinda Williams's *He Never Got Enough Love*, but her music is hard to classify: It's (sort of) acoustic folk-pop, laced with spare piano, mandolin, and violin (not fiddle) played by her husband, Gene Elders, from George Strait's Ace in the Hole Band. On "Crayons," her fourth album, she sings in a baby-fine voice that occasionally calls to mind Rickie Lee Jones (the breathtaking

STRANGELY BELIEVE IT!

HANNA BARBERA



JEFF BENDER/ZOO

On the left: the title character in the forthcoming remake of the Hanna-Barbera Sixties cartoon series *The Adventures of Jonny Quest*. On the right: animation buff and alternative rock icon Matthew Sweet. Is the resemblance a coincidence? We have no idea, but here's hoping that Jonny's sidekick Hajji is drawn like The Artist Formerly Known as Prince. S.S.

Gypsy's Jewel) as well as Nanci Griffith (*Roll on New River*). Elders continues to write poetic, soulful, and delicately atmospheric songs that sometimes dip into jazz (*War Between the Fears*) but more often nod toward homemade folk. All this makes it pretty hard to identify a certain sound for her, but one thing's sure: Elders is among the rare singer/songwriters to whom the term "artist" genuinely applies. *A.N.*

RAMBLIN' JACK ELLIOTT
South Coast
 RED HOUSE 59 (44 min)
Performance: Seminal
Recording: Okay

In case you've been living in Tibet for the last six decades, Ramblin' Jack Elliott is the Brooklyn cowboy who accompanied Woody Guthrie on his legend-making trek across America, and he was the originator of a style of plain-spoken vocals and strumming guitar that made everybody from Bob Dylan to Jackson Browne take notice. On his first full-length release in twenty years, Elliott picks up his battered Martin D-28 and moves through the songs of Guthrie, Tim Hardin, Derroll Adams, and Ian Tyson, his high-pitched voice worn and leathery — and difficult to take on some tunes (*I Ain't Got No Home*). But there's something commanding and moving in "South Coast," and no serious folk collection should be without it. *A.N.*

JONATHAN GREGG
Unconditional
 JAGDISC 008 (50 min)
Performance: Personable
Recording: Fine

Jonathan Gregg, a songwriter in the enriched mode of Marshall Crenshaw and Jules Shear, plays sophisticated pop for not-so-now people; he's definitely more world-of-mouth than flavor-of-the-month. On his second album, the pop aspect — the engaging melodies, the seamless flow, the enviable knack for a clever turn of phrase — is what instantly pulls you in. But the sophisticated aspect — his complex, craftsman-like guitar work, the compulsive intellect driving it all — is what keeps a discriminating listener coming back for more.

Beyond the delectable choruses and indelible hooks, the big payoffs in these songs are the guitar solos, cleanly articulated jewels of self-expression that recall Richard Thompson's piercing six-string epiphanies. Their tone and temperament are unfailingly suited to the emotional subtext of the songs, such as the tremulous wow-and-flutter of the brief but tasty solo in *A Bit of Mrs. Jones*, a tale of seduction whose particulars bring to mind the scenario of *The Graduate*.

Lightly dusted with a hint of country, a dash of reggae, and a soupçon of shameless Sixties popcraft, Gregg's songs take off from familiar reference points but land in places he can proudly claim as his own. A good time is guaranteed — unconditionally. (The album is available for \$15 from Jagdisc, 304 Mulberry St., #L.J. New York, NY 10012.) *P.P.*

Sürfers Rüle, Düde!

Fun fact No. 1: Laika and the Cosmonauts are a surf-music group from (of all places) Finland. Fun fact No. 2: they're an absolutely brilliant surf-music group from Finland, and maybe their country's most interesting musical export since Sibelius called it quits.

Actually, calling Laika and Co. a surf group is somewhat misleading. Granted, they're an all-instrumental rock quartet whose new album, "The Amazing Colossal Band," stomps in ways that will (deliberately) remind you of surf pioneers like Dick Dale or the Ventures.

But in this day and age the tag sets up certain negative expectations, which these guys don't really live down to here. In other words, they're not post-modern ironists trying to subvert the genre (like, say, Shadowy Men on a Shadowy Planet, of the *Kids in the Hall* theme). They're not revivalists either; on a purely aural level their sonic palate is every bit as contemporary as, oh, Smashing Pumpkins'. And they're not even twang-guitar purists like the usual run of neo-surf acts. Their sound is equally dependent on all sorts of exotic keyboards, which suggests they teethed

on the Sixties British productions of Joe Telstar Meek as much as on authentic California ho-dads such as the Surfaris and the Chantays.

What Laika and the Cosmonauts turn out to be is something rather special — great composers, arrangers, producers, and players who have discovered hitherto undreamed of harmonic and rhythmic possibilities in a hitherto moribund style. Whether it be endless-

ly imaginative originals (like *Delirium* and the sardonically titled *The Man from H.U.A.C.* — look it up, kids) or totally stoked takes on like-minded film and TV music (John Barry's *The Ipcress File*, a blistering main title from *The Avengers*), the material transcends any hint of gimmick. Rather, what

you hear is a truly world-class band doing what appears to come naturally — making pure pop/surf music for the Nineties and (probably) beyond. Miss this one and I'll come to your house and smack you. *S.S.*

LAIKA AND THE COSMONAUTS
The Amazing Colossal Band
 UPSTART 010 (44 min)



JIMI HENDRIX
Voodoo Soup
 MCA 11236 (57 min)
Performance: Revealing
Recording: Very good

The well-thought-out refurbishing of the Jimi Hendrix catalog continues with this latest prize, a best-guess assemblage of what would have been his fourth official studio album. The working title was "The First Ray of the New Rising Sun," but Hendrix died before completing the album, and most of the songs here surfaced later in various scattershot Seventies compilations. Now "Voodoo Soup" aims to be as close as possible to the album we'd have had if he'd lived to see the project through.

To my ears, it's successful; hearing the songs in this new alignment gives them a context they previously lacked. Only Hendrix knew his full intentions, of course, but "Voodoo Soup" embraces both earth and cosmos, revealing him to be moving toward a grounding in funkier, blues-based forms while evoking the incomprehensible mysteries of the universe, like a science-fiction writer or filmmaker whose medium of expression is the electric guitar. *Belly Button Window* is a blues written from the perspec-

tive of an unwanted child in the womb. *Room Full of Mirrors*, a comment on the human ego, reveals Hendrix's immense self-awareness: "I used to live in a room full of mirrors / All I could see was me / But I take my spirit and I crash my mirrors / Now the whole world is here for me to see." Then there's the sly, eloquent sexuality of *Night Bird Flying*, the dense, fever-dream blues riffing of *Midnight*, and the hard, black, tightly focused funk of *Ezy Rider* and *Freedom*.

What's most impressive about "Voodoo Soup" is how contemporary — or, rather, timeless — Hendrix's music sounds a quarter-century later. His creative intensity and musical vitality tower above anything else ever attempted, before or since, in popular music. *P.P.*

JANIS IAN
Revenge
 BEACON 51559 (52 min)
Performance: Superfluous
Recording: Very good

Janis Ian, the *At Seventeen* lass, all grown up and presumably better prepared to handle her angst and neuroses, returns with an album co-produced by John Jennings,

who has steered all of Mary Chapin Carpenter's records to greatness. The problem is that Ian doesn't have much to say anymore, settling for sexual titillation (*Stolen Fire*, about a lesbian triangle) rather than solid content. Not even Jennings can make a half-empty glass appear filled to the top, and while the quasi-jazz framework he gives Ian's material helps it go down easier (the seductive *Ready for the War* will get your juices stirring), not much about this lyrically lame, instrumentally heavy-handed album is satisfying in the end. *A.N.*

**GEORGE JONES
AND TAMMY WYNETTE**
One

MCA 11248 (33 min)

Performance: Splendid vocals, but . . .
Recording: Very good

The reunion here of George Jones and Tammy Wynette, one of country's greatest duet teams (and legendary sparring partners during their six-year marriage), has been a long time coming — some 15 years since the single *Two Story House*, not counting the couple's reprise of their old hit *Golden Ring* on Jones's "Bradley Barn Sessions" last year. In some ways, the rapport between them seems to have deepened, which makes for a more comfortable vocal performance (Wynette loves singing with Jones's old Baptist harmony but often finds his erratic phrasing difficult to follow). The two have never been better than on this album's *What Ever Happened to Us*, an aching ballad in the vein of their stellar past work, with Wynette supplying the vocal sob and Jones the painful regret. They also shine on *If God Met You*, which goes on to say, "She wouldn't like you." But not all the material is that strong; as Jones has admitted in an interview, "We kept trying to find better songs, and we couldn't, and we had to fill the album up." The Possum knows his stuff. *A.N.*

NATALIE MERCHANT

Tigerlily

ELEKTRA 61745 (50 min)

Performance: Dull
Recording: Good

Here's a math problem with aesthetic overtones: If you have 10,000 Maniacs and you subtract Natalie Merchant, how many Maniacs do you have left? The correct answer is 10,000, because judging from her somnambulant solo debut, Merchant wasn't a Maniac at all. In fact, she barely has a pulse.

The 13 tunes of "Tigerlily" seem to crawl along. While the intro to *Wonder* features a little guitar pizzazz and *I May Know the Word* quickens its tempo slightly for the chorus, neither is the sort of thing to get you dancing in the aisles (true, the Maniacs were never actually maniacal, but they did crank it up at times). If the lyrics had a little snap of their own, that might be compensation, but what you get here is vague, self-pitying, and surprisingly naive. On *Carnival*, for example, Merchant actually seems startled to learn that desperate and crazy and insincere people can be encountered on the street (duh!). And her vocals compound the staid, airless quality of the songs. With few exceptions, she sings without discernible emotion, so that in *Beloved Wife*, the saga of a man so despondent over the death of his longtime spouse that he contemplates suicide, Merchant doesn't seem mournful at all.

Three words: bad career move. *R.G.*

MUDHONEY

My Brother the Cow

REPRISE 45840 (74 min)

Performance: Lively! (!ylevil!)
Recording: Grungy (ygnurG)

One of Seattle's most deafening — make that *deserving* — bands, Mudhoney finally seems to be getting its due with "My Brother the Cow," a near-perfect summa-



Maggie, Terre, Suzzy Roche: beguiling

tion of its strengths in the humor and hard-rock departments. The album starts off with the guitar-and-vocal lacerations of *Judgment, Rage, Retribution and Thyme*, set to an avalanche of grunge-metal barre chords. *Generation Spokesmodel* takes the piss out of indie rock's rulebook of hip etiquette: "I got a guitar / Check it out, I'm a star / Hey kids, how would I look on the cover of *Spin*?" smirks singer/guitarist Mark Arm. The twelve songs here — only one of which clocks in at more than four minutes — are locomotive-fast, spiky, and sardonic as hell.

But Mudhoney also fires well-aimed barbs at the, ahem, pro-life movement in *F.D.K (Fearless Doctor Killers)* with lines like "I'm all for life until the bastard's born / After that he's out on his own." And the album's moral undercurrent suggests that Mudhoney isn't always laughing after all; in fact, *What Moves the Heart?* might even be a semi-serious query. As a grace note, "My Brother the Cow" segues from the closing track — a fierce Stooges update/homage called *1995* — into a sound collage that turns out to be the entire album played backwards. Brilliant! *P.P.*

THE ROCHEs

Can We Go Home Now

RYKODISC 10299 (54 min)

Performance: Largely invigorating
Recording: Very good

"What is that?" asked a friend who wandered in during the Roches' eight-minute tongue-in-cheek tribute to Seventh Avenue, *My Winter Coat*. "It's a sister act," I replied. "Well, somebody ought to squash 'em," she said. "They sound just like a female version of the Chipmunks."

Okay, so the Roches aren't everyone's cup of tea. But their acoustic folkie-pop grows on you, the playful melodies, eccentric harmonies, and left-of-center observations on love and life often hitting the aural bull's-eye. "Can We Go Home Now," their most satisfying record in years, finds Maggie, Terre, and Suzzy moving from quirky entries like *Christlike*, which uses religious



Mudhoney: Why aren't these men laughing?

would

somebody

please turn

that music

Up?



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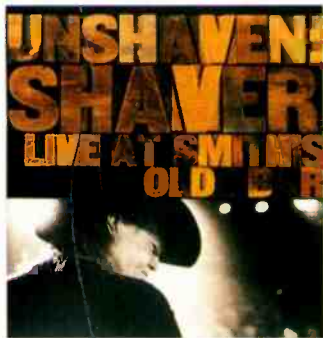
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metaphors to describe the rage and desire of a jealous boyfriend, to heartfelt songs such as *Home Away from Home*, about a childhood friendship with an adult neighbor. There's also a perfect nugget of domestic hell in the title track, which might be about the mental wrestling between mother and daughter (or intimate friends), as well as a funny/sad portrait of a woman who lives alone, dreading the *Holidays*.

The Roches are capable of turning out a bad line ("My heart was wounded on empty"), but on the whole their writing is clear, concise, and beguiling, even if you don't always immediately know it. Whether you think they're squashable or lovable, of course, depends on how musically adventurous you are. And on how you feel about sister acts. **A.N.**



SHAVER
Unshaven

ZOO 72445-11104 (47 min)
Performance: Smokin'
Recording: Good remote

Still country music's best-kept secret, Billy Joe Shaver follows his brilliant 1993 "Tramp on Your Street" with a blasting live set that leaves all the rough edges intact. Revisiting such chestnuts as *Fast Train to Georgia*, *Hottest Thing in Town*, *Honky Tonk Heroes*, and *Old Chunk of Coal*, Shaver and his son, Eddy, whose guitar rides a lightning bolt to work, turn out a splendid romp. Billy Joe's creaky tenor sometimes evoking Jerry Lee Lewis and otherwise sounding like the eternal lost hobo communing with the angels. As for Billy Joe's songwriting, it's simply the best workingman's poetry that Nashville's seen for decades. The next time somebody tries to educate you on the virtues of Garth and Vince, slip this one on the stereo and watch 'em crawl. **A.N.**

ROD STEWART

A Spanner in the Works
WARNER BROS. 45867 (57 min)
Performance: The usual
Recording: Glossy

You can't fool me. "A Spanner in the Works" isn't really a new Rod Stewart album. It's the same one he's been releasing under various titles for something like two decades now. Once again, rock tunes take a back seat to big, glossy ballads (a good idea, since Stewart's current band of session hacks couldn't shake any rock-and-roll action if you stood over them with a cattle prod). There's an oddball song, usually by

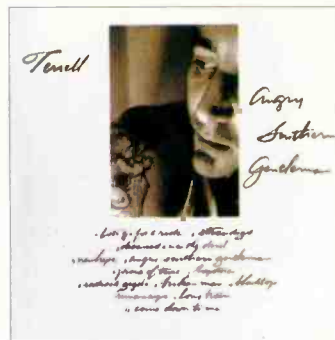
Tom Waits, to prove he can take chances. There's a song that hauls out the damn bagpipes (here, the oft-recorded traditional *Purple Heather*, for which Stewart claims authorship). There's an obvious "aging rocker salutes his roots" song — last time it was *The Motown Song*, now it's *Muddy, Sam and Otis*. And as usual, there's also one song that proves he's not completely out of gas, though here that song isn't the Tom Petty-written single, *Leave Virginia Alone* (whose backwoods imagery is ill-suited to Stewart's voice), but rather Bob Dylan's *Sweetheart Like You*, an overlooked gem that's performed in folkish, *Gasoline Alley* style.

Stewart went Adult Contemporary long before his time; by now he holds the record for rock's longest-running creative cop-out. His last album, the surprisingly good "Unplugged," where he did early Seventies material with old pal Ron Wood, only proved how far sidetracked Stewart's gotten. Of course, critics have been saying such things ever since 1975's "Atlantic Crossing," but if Rod doesn't mind rehashing the same old album, I don't mind rehashing the same old review. **Brett Milano**

The Wages of Skin



Remember Carol Shaya, the New York City policewoman who once bared it all for *Playboy* magazine and then got bounced from the force and plastered all over the tabloids? Well, woe not for the famously unemployed officer. Here, enjoying her fifteen minutes of fame, we find Shaya filming a new video (*Girlstown*) with Columbia Records dancehall reggae star Super Cat. Food for thought: Can Divine Brown be far behind? **S.S.**



TERRELL

Angry Southern Gentleman
POINTBLANK 40099 (49 min)
Performance: Confessional
Recording: Good enough

Five years after his well-reviewed debut, "On the Wings of Dirty Angels," Terrell returns with an autobiographical album about his physical and psychological relocation from Alabama to L.A. The problem here is that the info in the press release — the journey was financed by Terrell's stint as a human guinea pig at Vanderbilt University's medical school — is far more interesting than the musical trek itself.

While the lyrics sometimes conjure up an arresting image ("Whispered like a cottonmouth drinking lemonade"), and the mix of blues, folk, rock, and country occasionally packs a punch, Terrell never makes us feel the chill of his real-life saga, whether he's hustling women as a *Redneck Gigolo*, setting up a bank heist (*Strawdogs*), or declaring himself at the end of his rope (*Broken Man*). Sell it to the movies, dude. They like that surface stuff. **A.N.**

THE TRAGICALLY HIP
Day for Night

ATLANTIC 82729 (60 min)
Performance: Turgid
Recording: Annoying

The Tragically Hip are the biggest thing since back bacon in the Great White North, but they elicit no such sizzle in the United States. "Day for Night" isn't likely to change that, since R.E.M. has already covered the territory — dense post-post-modern rock — in "Monster." A turgid rehash by comparison, "Day for Night" is long-winded and tedious, from the clotted web of guitars that fulminate redundantly to the doomsday vocal exertions of Gordon Downie. There are intermittent flashes of excitement, such as the neopsychedelic bungee jump of *Daredevil*, but by and large the album is an hour-long exercise in heard-it-all-before. (Note: When will bands that don't have even a half-hour of decent material stop making 60-minute CD's?) **P.P.**

KEVIN WELCH

Life Down Here on Earth
DEAD RECKONING 003 (43 min)
Performance: Hit and miss
Recording: Very good

Alternative country artist Kevin Welch recorded two impressive albums for Reprise — the 1992 "Western Beat" is an overlooked classic — before the label de-

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cided he wasn't selling enough and dropped him from the roster. Too bad, because no matter how few of his albums crossed the cash register, Welch clearly demonstrated he was a prestige act, a singer/songwriter who could craft catchy, dignified commercial tunes (Trisha Yearwood's *That's What I Like About You*) as well as handle mystic images and ideas.

Now recording for the indie label Dead Reckoning, Welch does some experimenting in "Life Down Here on Earth." Previously he was backed by his muscular and eclectic band, the Overtones, who dipped into rock, folk, and almost New Age. By contrast, the new record features spare, mostly Celtic instrumentation — Irish fiddle, pennywhistle, and accordion. Alas, the experiment doesn't always work: The gentle looper *Troublesome Times*, for example, mostly sounds like Fellini movie music until a classic soul guitar arrives, seemingly out of nowhere, at the end of the track.

That said, Welch has made a more reflective album than his earlier collections, this one seemingly about the choices you make in life, good and bad, and learning to live with the consequences. While a couple of the songs sound too much like past efforts, and the one story song, *Kicking Back in Amsterdam*, doesn't really go anywhere, there's at least one gem in *The Love I Have for You*, a portrait of romantic obsession that's stirring in its quiet intensity. This may not be Welch's best work, but anyone who cares about progressive country and the poet's path will surely find something to like in it. *A.N.*

YO LA TENGO

Electr-O-Pura

MATADOR 92550 (59 min)

Performance: Heartfelt
Recording: Murky

For a long time Yo La Tengo looked like the ultimate critics' band, which isn't necessarily a compliment. Led by singer/guitarist and former rock scribe Ira Kaplan, Yo La's early albums pursued a moody shade of pop with some success, but there were so many musical cross-references and lyrical inside jokes (one song listed hits of the group America) that the band's own personality was lost in the shuffle. That changed in 1991 with "May I Sing with Me," where they mastered their influences — jangly garage rock, folk/rock harmonies, droney psychedelia. Their 1993 follow-up, "Painful," was both moodier and catchier. And the new "Electr-O-Pura" is the darkest and most challenging of the three.

Much of "Electr-O-Pura" recalls Neil Young's "Tonight's the Night," not so much in its theme as in its murky sound and general sense of dislocation, and there's some pop reassurance between the lines. Kaplan is a highly imaginative (if not technically stunning) guitarist, and he knows the expressive possibilities of vibrato and fuzz-tone. In fact, the lengthy closing track, *Blue Line Swinger*, piles up so much guitar-driven tension that it's a major relief when the song resolves in an uplifting chorus. You'd want to hunt the band down and strangle them if it didn't. *Brett Milano*

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JAZZ **REVIEWS****FREDDY COLE**

Always

FANTASY 9670 (54 min)

Performance: Heart and soul**Recording: Very good**

Twelve years younger than his famous brother Nat, Freddy Cole is finally — at 64 — beginning to get the recognition he's always deserved. Here, with a voice that

belies his age, Cole has come up with an album so drenched in romance that the program might have been selected by an open fire. This is mostly a lush orchestral affair, with arrangements by Tom McIntosh, Robin Eubanks, Joe Locke, Cole, and his son, Lionel. But the singer isn't swamped by the strings, and he is equally effective rendering Buffy Sainte-Marie's *Until It's Time for You to Go* accompanied only by pianist Cyrus Chestnut. What a lyrical player Chestnut is — and, for that matter, what a great crew producer Todd Barkan assembled for this set. Chestnut, Eubanks, Antonio Hart,

and Grover Washington, Jr., all contribute beautiful solos. A wonderful album. **C.A.**

RICKY FORD QUINTET**Tenor Madness Too!**

MUSE 5478 (51 min)

Performance: Hard-hitting**Recording: Good**

Herschel Evans was the tortoise and Lester Young the hare in the Count Basie Orchestra of the late 1930's, and together they set the ground rules for tenor saxophone competition. But the later model referred to here by Ricky Ford and Antoine Roney is "Tenor Madness." Sonny Rollins's 1957 album encounter with John Coltrane. Though "Tenor Madness Too!" isn't in that weight class, it's hard-hitting and enjoyable. In addition to turning in his usual



commendable job as a soloist, Ford has crafted five more-than-functional originals (the most ambitious is the moody but fluid *Blues Abstractions*) and imaginative arrangements of four standards, including Hank Mobley's *Up a Step* and Dizzy Gillespie's *Con Alma*. Best of all, Roney — Coltrane in this match, which is to say the puncher to Ford's boxer — for once sounds as explosive as he usually does live, with his brother Wallace's band. **F.D.**

KENNY GARRETT**Triology**

WARNER BROS. 45731 (57 min)

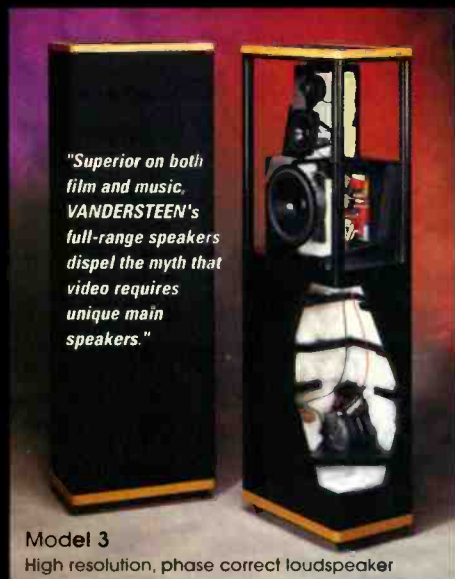
Performance: On fire**Recording: Excellent**

The most taxing part of a jazz critic's job these days is listening to lots of albums by musicians who have listened to lots of albums. It isn't very often that a record as good as Kenny Garrett's "Triology" comes along — the first album I've heard by this alto saxophonist that captures the fire he showed in concert with Miles Davis in the late 1980's.

The album is pianoless, just like Sonny Rollins's "A Night at the Village Vanguard" and Joe Henderson's two Eighties recordings from the same venue, but that isn't the only similarity. Garrett is inspired and fully equal to the very different challenges presented by Cole Porter's *Just One of Those Things* and John Coltrane's *Giant Steps* on one hand and by Johnny Mandel's *A Time for Love* and Dave Brubeck's *In Your Own Sweet Way* on the other. Even so, the most enjoyable performances here are Garrett's three witty originals, especially the careening *Wayne's Thang* — a clever twist on *Fee*

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Kenny Garrett: the fire this time

Fi Fo Fum, Wayne Shorter's twist on the chords to *Giant Steps*.

Like Shorter (and Rollins, too), Garrett at his most impassioned is Garrett at his most jocose, but I won't ruin things for you by itemizing his interpolations. Suffice it to say that this is one of the year's most impressive jazz releases, thanks in no small part to the responsive support Garrett receives from the talented young drummer Brian Blade and alternating bassists Char-nett Moffett and Kiyoshi Kitagawa (hey, if he's not offended by *Oriental Towaway Zone*, you shouldn't be either). *F.D.*

BENNY GOLSON

Benny Golson Quartet Live

DREYFUS 36552 (67 min)

Performance: Excellent

Recording: Excellent remote

Benny Golson is a prolific composer whose work includes many songs that have become jazz standards as well as countless TV show and commercial themes you probably never associated with him. That he is also an outstanding tenor saxophonist is sometimes overlooked — unless, of course, you are old enough to remember the Jazztet, which Golson co-led with trumpeter Art Farmer in the early Sixties. That Golson is still the superlative player he was thirty years ago is very much in evidence in "Live," a 1989 quartet date recorded in Italy. The group is completed by pianist Mulgrew Miller, bassist Peter Washington, and drummer Tony Reedus — three young players who probably weren't even born when Golson and his friend John Coltrane were running around in their hometown of Philadelphia looking for some place to play. There is no indication of a generation gap as these men perform, in a most cohesive manner, the standard *Sweet and Lovely*, Tom McIntosh's *The Cup Bearers*, and three Golson originals, including his classic bebop anthem, *I Remember Clifford*. Golson clearly also remembers Coltrane; his style is brisk, vigorous, and decidedly in the hard bop vein. This is excellent nonsense jazz. *C.A.*

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LEROY JONES

Mo' Cream from the Crop
COLUMBIA 66628 (62 min)

Performance: Very interesting
Recording: Very good

Trumpeter Leroy Jones, a stylistic chameleon who has spent three years buried in Harry Connick's big band, is now stepping out with his own album. A New Orleans native, Jones is steeped in that city's jazz tradition but not restricted by it. "Mo' Cream from the Crop" shows the young trumpeter maneuvering with ease and creativity through an eclectic program of standards and intriguing originals. The opener, *When My Dreamboat Comes Home*, is so weak I would have discarded it. The rest, however, is just fine, and Jones plays it with engaging flair, occasionally adding a boppish stroke to moldy fig fare. Six excellent musicians enhance these performances.

QUICK FIXES

**THE BENT BACKED TULIPS**

Looking Through . . .

EGGBERT 80015 (58 min)

The *nom du disque* is from a Beatles song, but the players are actually should-have-been-big cult faves Dramarama. What's here got left off a projected mid-Eighties double album, and it's in the band's best mode — ironic retro hard rock with gobs of wit and intelligence, including a great take on the Rolling Stones' version of Stevie Wonder's *I Don't Know Why*. S.S.

THE BEST OF DICK & DEE DEE

VARESE SARABANDE 5576 (37 min)

Thanks to one of the odder vocal blends of the Sixties, these kids' hits — *The Mountain's High* and *Thou Shalt Not Steal* — remain *sui generis* in 1995. Collector's note: The real curiosity is a version of Jagger/Richards' *Blue Turns to Grey*, with the Stones themselves as backing band. S.S.

ESQUIVEL

Music from a Sparkling Planet

BAR/NONE 056 (37 min)

More late Fifties and early Sixties space-age bachelor-pad music from the suddenly celebrated creator of the genre. To be sure, the vogue for this sort of thing is in part a Gen X joke — but kitsch or not, the stuff isn't stupid. On its own big-band terms, it's actually wildly inventive, not to mention a great way to show off your stereo system. S.S.

notably trombonist Lucien Barbarin (now *there's* a historic N.O. surname) and bassist Walter Payton. More, please. C.A.

PAT MARTINO

The Maker

EVIDENCE 22121 (51 min)

Performance: Smoldering
Recording: Excellent

Recovered from the various neurological and other medical problems that rendered him inactive for much of the Eighties, Pat Martino has made what might be his best album ever. He's never been the sort of guitarist who confuses volume with intensity, but his playing here is smoldering — it burns quietly and slowly, but it does burn. His piercing tone in two original ballads is testimony to his awareness that a hornlike approach to guitar is as much a matter of pitch as of flying fingers (not that



Art Pepper: triumph at the Vanguard

HAND IN HAND: SONGS OF PARENTHOOD

MUSIC FOR LITTLE PEOPLE 42569 (51 min)

Some of my best friends are parents, but I find this collection of songs by the likes of Joni Mitchell, Bobby McFerrin, Judy Collins, and John Lennon so smug and self-satisfied that it could be used to promote the sale of birth-control devices or complete sexual abstinence. *William Livingstone*

THE POLICE

Live

A&M 540 222 (two CD's, 147 min)

Everybody's favorite bottle-blond power trio at the beginning of their career (in a Boston club) and on their final tour (at an Atlanta arena). Verdict: a terrific memento of a great band. Sting's *faux* Jamaican accent notwithstanding. S.S.

**THE SMITHEREENS**

Blown to Smithereens

CAPITOL 31481 (61 min)

Question: Why aren't the Smithereens one of the biggest bands on the planet? Only conceivable answer: Some sort of prejudice against regular guys from New Jersey. And if you doubt that, check out this quite remarkable best-of compilation, in which their Beatles-meet-AC/DC synthesis is distilled to its absolute essentials. Pop-rock doesn't get any better. S.S.

TRANCE 1

ELLIPSIS ARTS 4000 (77 min)

Just as Christian monks used chant to heighten spiritual awareness, the other great religions of the world have employed music to open the mind to alternate realities. This

disc provides excellent examples, including hymns to Hindu deities and music from Turkish dervishes and Tibetan Buddhist monks. It's wonderfully exotic. W.L.

CARLOS WARD

Faces

PM 0001 (75 min)

Ward is a veteran alto saxophonist and flutist who's never received a fraction of the attention due him. This self-produced CD — only Ward's second as a leader — isn't quite the showcase it might have been, but it's worth hearing: I wouldn't want to have missed his keening version of *The Gypsy*, a song indelibly associated with Charlie Parker. (Available from PM, phone 718-778-2947.) F.D.

SPEEDY WEST & JIMMY BRYANT

Stratosphere Boogie

RAZOR & TIE 2067 (36 min)

The duo of pedal steel guitarist Speedy West and lead guitarist Jimmy Bryant was well known in Nashville circles, but their astonishing, breakneck country-jazz instrumentals (recorded for Capitol) have languished in obscurity since the Fifties. What do they sound like? Imagine Les Paul's early records rendered without the benefit of overdubbing and you get a vague idea; in any case, you can take the title literally. Great fun, and a real historical find. S.S.

THE WHO

A Quick One

MCA 11267 (56 min)

Sell Out

MCA 11268 (72 min)

The restoration of the Who catalog continues in the revelatory fashion established by the recent "Live at Leeds" reissue. Which means both of these Sixties classics now run twice their original length, with bonus tracks quite often as sublime as the familiar stuff. Great moment (on "A Quick One"): a heretofore unreleased 1966 medley of *My Generation* and *Land of Hope and Glory* (!) that pretty much puts the Sex Pistols in perspective. S.S.

his fingers don't fly, especially in his own *The Changing Tides*). Pianist James Ridl, bassist Marc Johnson, and drummer Joe Bonadio help make this an exemplary album of modern chamber jazz. *F.D.*

ROSCOE MITCHELL

Hey Donald

DELMARK 475 (57 min)

Performance: Not so straight-ahead
Recording: Very good

Some of the folks I know who've heard "Hey Donald," a Roscoe Mitchell quartet date with Jodie Christian on piano and Tootie Heath on drums, have been referring to it as the veteran Art Ensemble of Chicago member's first straight-ahead album. Maybe, but only comparatively speaking. The quizzical tilt of Mitchell's tenor phrases on the semi-R&B title track confirms that straight-ahead for him is pretty twisted for anybody else, and his duets with bassist (and fellow AAC member) Malachi Favors are exploratory by anyone's standards. It all makes for a stimulating hour of music, with the underrated Christian giving occasional lessons in the art of hard box piano. *F.D.*

ART PEPPER

The Complete Village Vanguard Sessions

CONTEMPORARY/FANTASY 4417

(nine CD's, 388 min)

Performance: Monster in a box
Recording: Excellent

Phase 1 of Art Pepper's career included his days as a star soloist with the Stan Kenton Orchestra, his 1950's LP's for Contemporary, and his anomalous position as a white West Coast hard bopper, as well as his enslavement to heroin, numerous jail sentences, and many tentative comebacks. Phase 2, which ended with his death in 1982, began with his triumphant week-long gig at New York's Village Vanguard in 1977, during which he fronted a quartet featuring pianist George Cables, bassist George Mraz, and drummer Elvin Jones.

In the 1980's, Contemporary released four LP's of Pepper live at the Vanguard, and now we have nine CD's from the gig, each including one complete set (intros, false starts, and all) recorded during the last three nights of Pepper's engagement. This represents one of the few opportunities we've had to follow a great musician's progress from night to night. Pepper holds up brilliantly under this close scrutiny, liberated (despite Jones's presence) from the Coltrane influence that gripped him in the years just before and audibly gaining in confidence as the nights wear on. To say that a jazz improviser "talks" through his horn might be the hoariest of clichés, but in Pepper's case it applies. Beginning with this gig, "He shouted, squalled, moaned, cried, whimpered, and shrieked whenever he felt like it," observes his widow, Laurie, in her eloquent essay, aptly titled "Monster," in the notes for this set.

Pepper, then in his early fifties, apparently was determined to prove that he was the equal of any musician ever to play the hallowed Vanguard, and he came pretty damn close. This music still pricks, almost twenty years after the fact. *F.D.*

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BARTOK: *Bluebeard's Castle*

Szendrenyi, Struckmann; Frankfurt Radio
Symphony. Inbal
DENON 78932 (60 min)
Performance: Big
Recording: Revealing

Bluebeard's Castle, Bartok's only opera. A powerful single act of psychological music drama, has had numerous revivals over the years and more than one memorable recording. The rooms in the castle are the dark recesses of Bluebeard's mind, and his wife, Judith, who tries desperately to fling open the doors, is ultimately trapped behind them. That may sound like old-fashioned Freudian hokum, but, in fact, as transformed by Bartok's stunning score, the piece is extraordinarily effective. The biggest problem is that the libretto is in Hungarian, and the vocal writing is profoundly wrapped up in the sound of that strange language. A translation is probably desirable on the stage but doesn't seem to work in a recording.

The solution here involves a strong Hungarian singer as Judith, soprano Katalin Szendrenyi, and a vocally and dramatically outstanding German, baritone Falk Struckmann, as Bluebeard. The Frankfurt Radio Symphony may not be a major-league out-

fit, but under conductor Elisha Inbal — the real star of the production — the performance has size, and the recording throws considerable light on Bartok's most colorful and evocative work. *E.S.*

BRAHMS: *Clarinet Quintet*

WEBER: *Clarinet Quintet*

Stoltzman; Tokyo String Quartet
RCA 68033 (67 min)

Performance: Fine Weber
Recording: Agreeable

Some twenty years ago the young Richard Stoltzman and the Cleveland Quartet made an irresistibly warm and compassionate recording of the Brahms Clarinet Quintet. The remake at hand with the Tokyo Quartet is not irresistible. It is impeccable in respect to technical assurance, but somehow a little less convincingly Brahmsian. I get the feeling that Stoltzman and his associates this time around felt they should take a more overtly dramatic approach, and in so doing came off sounding constrained and "uptight." There is drama in the work, to be sure, but it is drama on Brahms's own, generally expansive terms, which seem to have been rejected here in favor of a more objective or more externalized view that simply doesn't work as well.



Weber, on the other hand, is certainly taken on his own terms in his somewhat lighter but downright adorable quintet; everyone involved seems to be wholeheartedly and uncontrivedly relishing its affectionate good humor. There is simply no more fetching current version of this work. The sound is generally agreeable in both concertos, though the cello might have been a bit more in the picture. *R.F.*

BRUCKNER: *Chamber Works*

L'Archibudelli

SONY 66251 (76 min)

Performance: Conscientious
Recording: Very clear

Historically informed string-instrument performances are the stock in trade of L'Archibudelli, the Netherlands-based group of players centered around cellist Anner Bylsma, who is here joined by violinists Vera Beths and Lisa Rautenberg and violists Jürgen Kussmaul and Guus Jeukendrup. The CD comprises all of the rare chamber works by Bruckner, whose output was otherwise almost wholly devoted to the symphonic and ecclesiastical.

The four-movement String Quartet in C Minor dates from 1862, a period that also saw completion of Bruckner's first orchestral work, the Overture in G Minor. Along with a rondo in the same key, the quartet makes for pleasant listening, with sporadic glimpses of the mature composer in the middle movements and some real virtuoso writing in both the finale and the appended rondo.

The String Quintet in F Major dates from the end of the 1870's, when the composer was taking a breather from the stormy drama of the Fifth Symphony, not only by this brief detour into chamber music but also by way of the most amiable yet enigmatic of his nine mature symphonies, No. 6. I side with those who find the quintet, for all its absorbing episodes, something of a misbe-

Maestro McFerrin

Bobby McFerrin, best known as a jazz and pop vocalist and composer, has now made his debut recording as an orchestra conductor. "Paper Moon," released by Sony Classical in mid-July, features McFerrin conducting the Saint Paul Chamber Orchestra in Mozart's *Eine Kleine Nachtmusik* and his overture to *The Marriage of Figaro* as well as in excerpts from Stravinsky's *Pulcinella* and Mendelssohn's *Midsummer Night's Dream*. McFerrin also displays his unique talents as a vocal "instrumentalist" by performing the solo part in Bach's A Minor Violin Concerto, Boccherini's String Quintet No. 1, Fauré's *Pavane*, and Tchaikovsky's *Andante Cantabile* and joining the orchestra's principal cellist as one of the soloists in a Vivaldi concerto for voice and cello.



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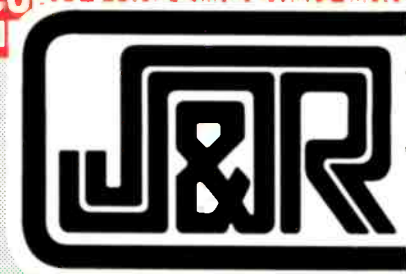
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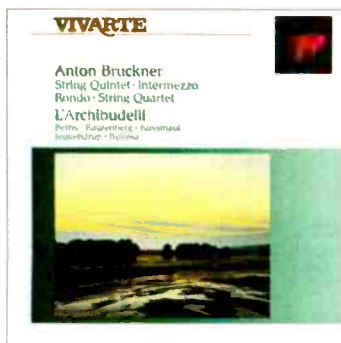
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gotten symphony. Heresy or no, I keep wanting to hear a full orchestra, or at least a full symphonic string body. As is almost always the case with Bruckner, the heart of the quintet is in the richly textured polyphony of its slow movement. The episodic last movement has a decidedly symphonic ending. The remaining work on the CD, the somewhat rough-hewn, *Ländler*-like D Minor Intermezzo, was composed as an alternate to the quintet's scherzo; while pleasant, it is not as individual in character.

While L'Archibudelli's musicianship cannot be faulted, the recording, done in what seems like a small but nicely airy church, is very clear and bright, notable more for an almost analytical sorting out of linear ele-

ments than for a sonic blend. The music really needs both qualities. *D.H.*

DEBUSSY: La Mer; Nocturnes; Jeux; Rhapsody for Clarinet

Cohen; Cleveland Symphony Chorus and Orchestra, Boulez
DEUTSCHE GRAMMOPHON
439 896 (71 min)

Performance: Superb
Recording: Spacious

Pierre Boulez has by now rerecorded with the Chicago and Cleveland Symphony Orchestras on Deutsche Grammophon most of the Debussy, Bartok, and Stravinsky works he recorded twenty-five or thirty years ago in Cleveland, New York, and London for what was then Columbia Records, and the new versions have superseded the earlier ones in every respect. The new performances benefit, of course, from glorious orchestral playing and spacious digital recording, and Boulez has added a welcome degree of interpretive warmth to the insights and technical precision he has always brought to this music. The three big works on this new disc benefit enormously from all of those developments.

In his earlier recording of *La Mer* Boulez took a curiously deliberate view of the middle movement ("*Jeux de vagues*"). The new performance is nearly as slow, and almost

certainly the slowest among current recordings of this section, and yet this time the pacing seems only mildly "expansive" — neither at odds with the imagery in the music nor a breakdown in its continuity — and the grandeur of the work's final section is quite remarkable.

So is everything else in this collection. There is certainly nothing hinting at deliberateness in the *Nocturnes*, which move with an otherworldly lightness and grace, nor in the still underacknowledged *Jeux*, which is not merely X-rayed as it was before but comes off as a work of great communicative power. Franklin Cohen, the Cleveland Orchestra's principal clarinetist, brings a high level of distinction to the Clarinet Rhapsody to round out a truly outstanding issue. *R.F.*

GLASS: La Belle et la Bête

Soloists: Philip Glass Ensemble, Riesman
NONESUCH 79347 (89 min)

Performance: Musically magical
Recording: Excellent

Philip Glass's first music-theater work based on films of Jean Cocteau, *Orphée*, was more or less a traditional opera, but *La Belle et la Bête* (the non-Disney version of "Beauty and the Beast") uses live performers to accompany the original film. There is an aspect of Glass's work that

Schumann and "The Romantic Generation"

Two of this year's most appealing piano releases have come out at the same time, complementing each other not only in respect to repertory (none of which is directly duplicated), but in performing style as well. The repertory link is the music of Schumann, to which Abdel Rahman El Bacha's Forlane disc is devoted in full. A somewhat broader link is a shared view of the music produced in the quarter-century that followed the death of Beethoven. Charles Rosen's illuminating and enjoyable MusicMasters CD, "The Romantic Generation," released around the same time as his new book *The Romantic Generation: Music 1827-1850* (Harvard University Press), also includes some small works of Chopin and Liszt.

Rosen's book itself comes with a CD, and three of the performances there are duplicated on the MusicMasters recording — Liszt's *Réminiscences de Don Juan*, his piano arrangement of Chopin's song *My Joys*, and one of Chopin's own nocturnes. Along with another Chopin nocturne and Liszt's transcription of his own song *Die Loreley*, the MusicMasters CD offers one of the richest of Schumann's sets of "characteristic pieces," the *Davidsbündlertänze*. Rosen plays the first edition of this big suite, which, as he

points out in his annotation, is richer in "fantastic details" than the revised version. He does not go in for any sort of empty showmanship in the Liszt or Schumann pieces, but in going for substance he does not neglect tonal beauty either.

El Bacha, a 36-year-old Lebanese who won the Queen Elisabeth of Belgium Competition at 19, shows a similar seriousness toward the musical integrity of

the Romantic era's defining works and is likewise equipped with technical resources that enable him to devote his energies to interpretation and communication. His Schumann program is an imaginative one — the Sonatas No. 2 and No. 3 (the so-called Concerto without Orchestra) framing the *Waldszenen* — and his response to it is refreshing. His touch is light, his sense of proportion is unerring, and every phrase shines with a radiant, clarifying intimacy that is never at odds with the music's essential vitality. In short, he gives the impression of unlimited confidence and belief in these works.

The sound is first-rate on both discs.

Richard Freed

CATHERINE TEMERSON/SCHUMANN ASSOC.



Pianist Charles Rosen

SCHUMANN: Davidsbündlertänze

CHOPIN: Two Nocturnes; "My Joys"
(arr. Liszt)

LISZT: Réminiscences de Don Juan; Die Loreley

Charles Rosen (piano)
MUSICMASTERS 67154 (73 min)

SCHUMANN: Piano Sonatas Nos. 2 and 3; Waldszenen

Abdel Rahman El Bacha (piano)
FORLANE/KOCH IMPORTS 16722
(63 min)

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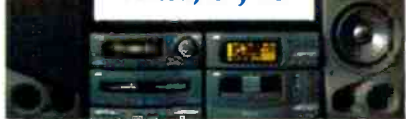


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might most simply be called "music as magic." The incantatory and transformative qualities of his style lend themselves perfectly to fairy tales and other otherworldly subjects, and this one is perfect material for his imagination.

But what a difficult task Glass has set himself! Replacing the original soundtrack of a film, with singing where there was spoken dialogue, requires Glass to set, and the performers to sing, every single line of the original in a quasi-lip-sync style. It is not just a matter of timing. Spoken dialogue invariably moves along much faster than nor-

mal sung text; thus, everything in this opera has to be quick, beyond recitative, breathless in its pacing. The result is that there is almost no chance for lyric expansion in the voices. All the musical development must be left to the orchestra, and even the orchestral music, although more varied in pacing than the vocal parts (you can sing quick syllables against slow music), tends to stay on the move as it tries to keep up with the film.

In live performance and also in this recording, the opening scenes seem, if not quite frenetic, perpetually out of breath.

And the problem is exacerbated by the classic difficulties that confront non-French singers trying to sing in French; sometimes you feel they can barely spit out the syllables. Eventually, though, both singers and audience adjust and begin to get wrapped up in both story and music. Even a small relaxation of the pace creates a big lyric feeling. Glass's clear linear/harmonic style has real affinities with Cocteau's classical clarity; both artists play continually with strong emotions captured within very severe restraints.

Glass's theater music works best when it involves his own ensemble of winds and keyboard instruments, here augmented by a string section and brass. There are no standouts in this ensemble cast, although John Kueher's uncanny ability to switch vocally between the Father and the Moneylender is striking. The somewhat goody-goody character of Beauty, the unrelentingly intense *parlando* of her part, and the linguistic difficulties all leave Janice Felty hovering on the edge of a difficult role. Gregory Purnhagen, who sings both the Beast and Beauty's would-be lover Avenant (who turn out to be, more or less, two aspects of the same creature), shows a somewhat surer command of French; he also has the best opportunity to create character through music, and he makes something of it. The ample booklet contains an interview with the composer and full texts and translations. *E.S.*

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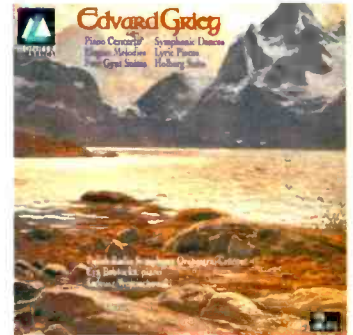
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GRIEG: Piano Concerto; Symphonic Dances; Elegiac Melodies; Peer Gynt Suites; Holberg Suite; Lyric Pieces
Poblocka: Polish Radio Symphony, Wojciechowski
CONIFER/BMG 51750 (two CD's, 153 min)
Performance: Pristine!
Recording: Excellent

Put this budget-price two-CD Grieg collection down as a real sleeper even though the public is not exactly crying for yet another recording of the Piano Concerto or the two *Peer Gynt* Suites. My anticipatory "What, again?" feelings turned to enormous satisfaction and pleasure as the relatively unknown pianist Ewa Poblocka launched into the concerto with a combination of beguiling warmth and impulsive vigor that simply disarmed all criticism.

There was never any letdown throughout the set, either on Poblocka's part or by the excellent Cracow-based orchestra under the direction of Tadeusz Wojciechowski. The orchestral pieces, ranging from the all too familiar *Peer Gynt* excerpts and Two



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In many respects the most surprising parts of this collection are the eight excerpts from the Lyric Pieces, all originally written for piano. Listen to the magical *Evening in the Mountains* from Op. 68 and the amazing proto-Debussyian *Bell Ringing* from Op. 54. The recording is just fine,

with brightness and punch, and plenty of warmth in the strings. *D.H.*

LEHAR: The Merry Widow

Studer, Bonney, Terfel, Skovhus, others; chorus; Vienna Philharmonic. Gardiner
DEUTSCHE GRAMMOPHON
439 911 (79 min)

**Performance: Creamy
Recording: Rich**

If you still regard the early-music scene the way a steak eater thinks of tofu, the idea of musicological revisionist John Eliot Gardiner conducting *The Merry Widow*

must seem breathtakingly perverse. Surprise! He provides all of the schmaltz and Viennese sensibility anyone could want, though not without significant emendations.

Normally, *The Merry Widow* is performed with only the piano score; apparently an orchestral score simply doesn't exist, or didn't until Gardiner had one made from parts supplied by the Lehar estate. It makes all the difference. Numerous orchestral details emerge, giving the whole operetta a much greater sense of musical foreground and background. In many ways, Gardiner achieves a sumptuousness to equal that of Herbert von Karajan's 1972 account, though when he carries over a passage here and there, it's with a much greater sense of purpose. Those who know Gardiner through his unyielding Beethoven symphony set won't believe this is really him.

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Soprano Cheryl Studer creates a sexy, coquettish Hanna by reining in her Wagnerian pipes. As Danilo, the bright young Danish baritone Boje Skovhus portrays his Act II rejection by Hanna with an unusual gravity that gives the opera's action a stronger dramatic counterpoint. Soprano Barbara Bonney is an elegant Valencienne and baritone Bryn Terfel an appropriately blustery Baron Zeta. *D.P.S.*

MENDELSSOHN:

A Midsummer Night's Dream

Battle, Von Stade, Dench; Tanglewood Festival Chorus; Boston Symphony, Ozawa
DEUTSCHE GRAMMOPHON
439 897 (56 min)

**Performance: Musically splendid
Recording: Likewise**

Musically, this is a beautiful issue. Fred-
Merica von Stade, who sang the Second Fairy's music in German in the lovely Ormandy recording on RCA Victor, is every bit as persuasive in this English-language version. Kathleen Battle, the Tanglewood Chorus, and the orchestra are similarly committed. Seiji Ozawa is obviously in love with the work; he even helped edit the spoken text for a single narrator — and there's the rub.

Kurt Masur's recent Teldec recording of the *Midsummer Night's Dream* music was spoiled for most Anglophone listeners by having narration in German. Ozawa's, which otherwise exudes more charm than Masur's, is also spoiled by the narration even though it is in English. Actress Judi Dench has distinguished herself in the theater, but there is just too much of her here in relation to the music. I'm put off by all



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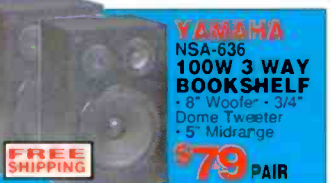


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the intensity, by the jarring entrances, and by her pauses after each line of verse, irrespective of expressive sense. It doesn't help, either, that in many of her segments she seems to have been recorded from the depths of a cistern.

Ozawa's singers and players are recorded handsomely, and some listeners will not be distressed by the narration. My own feeling is that this glorious music works best either in the context of the play itself, with its various characters taken by different actors, or as a pure concert work with the barest minimum of spoken material — or none. *R.F.*

MOZART: Three Fantasies (K. 396, 397, and 475); Piano Sonata in C Minor (K. 457); Adagio in B Minor (K. 540)

Valery Afanassiev (piano)
DENON 78945 (69 min)

**Performance: Intriguing
Recording: Lifelike**

All five works here are in minor keys, and three of them bear the title "fantasy," which might have suited the K. 540 Adagio as well. More than an hour of dark, minor-key Mozart in Valery Afanassiev's hands may be rather too much — in fairness, though, the monotony may reflect

more on his programming sense than on his playing. Of course, no one has to listen to all of any recorded collection at one sitting, and this one may be worth trying in shorter takes.

As with his earlier recordings, Afanassiev has provided bizarre annotation consisting largely of philosophical-autobiographical-confessional essays and "poems" sprinkled with references to the Tibetan *Book of the Dead* and citations of his own other writings. If you don't look at the annotation you may well find that his performances are intriguing, credible statements of the music (if you do read it, you may feel he succeeds musically in spite of himself). He has no apparent technical problems, he clearly knows the material, and he only occasionally belabors a dramatic point. He presents the C Minor Fantasy (K. 396) in the unfinished form in which Mozart left it; the piece is certainly more poignant that way than with any of the conclusions that have been suggested. There is, in fact, a good deal more poignancy than bluster in these performances, and the exceptionally lifelike piano sound is quite a boost. *R.F.*

PURCELL: Dido and Aeneas
Gens, Martin-Degor, Berg, others; Les Arts Florissants, Christie
ERATO 98477 (52 min)
**Performance: Superb
Recording: Natural**

PURCELL: Dido and Aeneas
Bott, Kirkby, Ainsley, others; Chorus and Academy of Ancient Music, Hogwood
L'OISEAU-LYRE 436 992 (52 min)
**Performance: Luxuriously cast
Recording: Excellent**

Few pre-Mozart operas deserve so many wonderful recordings as *Dido and Aeneas*. And though neither of these two new ones is as vividly characterized as Nicholas McGegan's on Harmonia Mundi with Lorraine Hunt, William Christie's set on Erato offers soprano Véronique Gens as the most vocally lustrous Dido on the early-music scene, and Christopher Hogwood's set on L'Oiseau-Lyre has all manner of musicological alternatives even though its music-making is one-dimensional.

While some of Christie's recordings have emphasized polish at the expense of expressiveness, this is not one of them. Dido's famous "When I am laid in earth" has a near-shattering emotional impact thanks to the funereal pacing — and also to Gens's regal vocalism, which so naturally conveys the gravity of the situation. Instrumentally, Christie makes much of the harmonies, colors, and dance-like rhythms. And while there is a welcome French accent to the playing, the singing is idiomatic and unacted.

Hogwood's Dido, Catherine Bott, initially seems vocally thin for the role, though she is ultimately satisfying by virtue of her verbal nuances. Elsewhere, Emma Kirkby is happily cast as Belinda, especially when she matches pipes with Julianne Baird in the cameo role of the Second Woman. In general, this recording is luxuriously and

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BACH: Goldberg Variations

Konstantin Lifschitz (piano)
DENON 78961 (79 min)
Bach composed his "Goldberg" Variations to provide diversion for an aristocratic patron who suffered from insomnia. Lifschitz's deeply felt interpretation has virtuosity and great clarity of articulation as well as the elegance, delicacy, and liveliness Bach's patron asked for. He keeps me awake and alert throughout the piece. *William Livingstone*

BRAHMS: Symphony No. 3; Alto Rhapsody

Van Nes; Tanglewood Festival Chorus; Boston Symphony, Haitink
PHILIPS 442 120 (54 min)
Bernard Haitink and the Boston Symphony deliver some burnished-gold Brahmsian moments, but both he and contralto Jard van Nes are less persuasive here than in their own earlier recordings of the respective works. Van Nes showed more conviction in her recent *Alto Rhapsody* with Herbert Blomstedt and the San Francisco Symphony, and Haitink himself achieved greater overall momentum in the Third Symphony he recorded with the Concertgebouw Orchestra some twenty-five years ago. *R.F.*



HAYDN: Symphonies Nos. 99 and 100

La Petite Bande, Kuijken
DEUTSCHE HARMONIA MUNDI 77328 (52 min)
Sigiswald Kuijken has given us some superb Haydn performances, but these newest ones are curiously underanimated. The witty syncopations in No. 99 are smoothed almost entirely away, and there seems to be a determination to avoid the slightest hint of a smile, let alone real sparkle, in the "Military" Symphony. Roger Norrington's similar coupling on EMI is far more fetching and comes with a little bonus: Haydn's seldom-heard *Covent Garden Overture*. *R.F.*

PROKOFIEV: Romeo and Juliet, Suite

Royal Concertgebouw Orchestra, Chung
DEUTSCHE GRAMMOPHON 439 870 (63 min)
Prokofiev made three suites out of the score for the ballet *Romeo and Juliet*, and Myung-Whun Chung has drawn on all of

them to make a fourth. This is a big-size effort recorded in the Concertgebouw hall itself. Alas, Chung's selection of numbers, the glossy, brilliant style of the performance, and the fatness of the recorded sound have the curious effect of acoustical overkill, making the music seem alternately bombastic and trivial. *E.S.*



SCHUBERT: Symphonies Nos. 4 and 8

Helsingborg Symphony, Ostrowsky
DISCOVER 920213 (64 min)
Here's a fine budget CD that not only intelligently pairs Schubert's two "tragic" symphonies, but also presents them in readings imbued with both verve and passion. Virility and sensitivity are displayed throughout No. 4, called the "Tragic"; I especially like the weighty menuetto. The performance of the truly tragic "Unfinished" (No. 8) is deliberate and highly charged in the first movement, heart-clutching in the second. Israeli-born Avi Ostrowsky bears watching. He has his fifty Helsingborg musicians on their toes all the way. Excellent sound. *D.H.*

TALUJON PERCUSSION QUARTET Hum

TALUJON 001 (60 min)
Talujon starts out this self-produced recording debut with a whopper reading of the Cage *Third Construction* and then goes on to a knife-edge performance of Part I of Steve Reich's *Drumming*, Dean Drummond's tricky *Dirty Ferdie*, and a few items from the quartet's own bag of tricks, including four players on a single marimba, vibrating metal dipped in water, even a bit of collective wit billed as *Their Four and Sow Three* (the music is as odd as the title). If you want this exciting and amusing album you will probably have to write directly to Talujon at 140 Riverside Dr., #9C, New York, NY 10024. *E.S.*

FREDERICA VON STADE Voyage à Paris

RCA VICTOR 62711 (70 min)
Frederica von Stade has long made a specialty of early twentieth-century French art songs, and she brings her usual verve and charm to bear upon the ones in this generous collection. Her voice sounds whitish and thin at moments of stress, however, and she is just a touch heavy-handed with feathery-fine trifles such as Satie's *Trois Mélodies* and the Poulenc miniatures she has selected. Martin Katz gives her expert support on the piano, and the recorded sound has a pleasing resonance. *J.J.*

innovatively cast, with a male Sorceress (David Thomas) and a boy soprano as the First Sailor (Daniel Lochmann). There are even authentic sound effects (mostly thunder) borrowed from Baroque-era machines at the Drottningholm Court Theater, though they sound more like offstage car accidents.

Hogwood has also plugged all of the holes that musicologists have found in the score with dances and ritornelli derived from existing music in the opera. The Christie recording plugs only the Act II finale, rounding out the opera's tonal scheme with an animated, gloating witches' chorus written by Bruce Wood in the style of Purcell. Though some might frown on the practice of inserting newly composed music, it's the most dramatically effective solution. *D.P.S.*

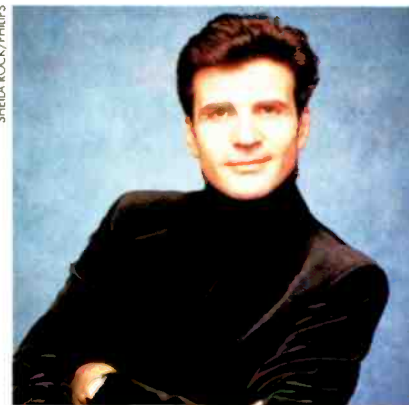
SCHUBERT: Schwanengesang; other songs

Holzmayr; Cooper
PHILIPS 442 460 (77 min)
Performance: Beautiful
Recording: Excellent

Recitals have become endangered species in our musical landscape, but we can always hope for a turnaround with artists like the Austrian Wolfgang Holzmayr in our midst. It's the beauty of the voice itself that first grips the listener: a light baritone of moderate size and range, used with great skill and refinement. Within a relatively limited dynamic scale he displays a sensitive pointing of words and abundant coloristic variety. Songs of an intimate nature, like *Die Taubenpost* and *Frühlings-Sehnsucht*, bring out his artistry most impressively, but he doesn't slight the bitter Heine songs either, capturing the wrenching despair of *Der Atlas* and the ghostly aura of *Der Doppelgänger*. At the risk of carping, I do find his temperament a shade too placid, too concerned with sheer beauty of sound. A bit more defiance in *Aufenthalt* and a jauntier approach to *Abschied* would be welcome.

Five additional songs on texts by the *Schwanengesang* poet, Johann Seidl, and two additional rarely heard songs on poems by Ludwig Rellstab (*Lebensmut* and *Herbst*), all dating from Schubert's final year and thematically attuned to the spirit of the cycle, complete the program. Imogen Cooper, a distinguished concert pianist in her own right, is an outstanding collaborator. *G.J.*

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THE HIGH END

BY PETER W. MITCHELL

What's in a Name?

Recently, while visiting Los Angeles, I spent an interesting morning with the eponymous Mark Levinson. Before you march off in search of a dictionary, I'll tell you that "eponymous" refers to a personal name that also identifies a company, institution, or the like. Thus "Donna Karan" identifies both a line of fashions and the designer who created them. "Dolby" identifies a series of noise-reduction systems, film-sound improvements, and the engineer (Ray Dolby) who designed them.

"Eponymous" is an adjective that should be familiar to audio enthusiasts, since many companies and product lines have been named after the engineers who founded the companies and designed their first products. Of course, as in the examples of Bob Carver (Carver and Sunfire amplifiers) and Roy Allison (Allison and RDL loudspeakers), eponymous founders may eventually leave their namesake companies and start new companies. And companies are not always founded solely by the engineers who designed the products. For example, in the companies launched by (Saul) Marantz, (Frank) McIntosh, and (Avery) Fisher during hi-fi's early years, many circuit designs were created by Sid Smith and others.

Mark Levinson has been an influential force in high-end audio for two decades, but he's not an engineer. He's a musician, from a family of musicians. Perhaps his most important gift is that he knows what music actually sounds like, and he is dedicated to improving both its recording and playback. In contrast, many professional musicians are poor judges of sound quality. They translate a score into such a vivid mental image of the music that they often focus on that instead of the actual sound. While responding to musical values (tempo, phrasing, expression), they may not notice differences in the actual sound itself, such as its timbre and stereo imaging.

Levinson first gained attention among audiophiles as the creator of a series of "purist" recordings that were issued on LP during the 1970's. Then, as now, many microphones had obvious inaccuracies that colored every sound, and recording engineers often selected microphones for specific tasks according to the way

their colorations complemented the tone of the instrument or voice being recorded. Levinson, on the other hand, chose the most accurate microphones he could find — a pair of omnidirectional B&K measurement mikes. He recorded mostly classical music, in recitals around Yale University. Recently those recordings were reissued on CD, and, aside from some low-level tape hiss, the CD's deliver fine sound. Timbres are tonally authentic, with realistic live-concert ambience.

Levinson's recording activities led him into a quest for improvements in electronics — modifying tape recorders for improved sound, developing better phono preamplifiers, and so forth. He hired John Curl and other circuit-design engineers for these projects. Then he and a business partner launched the Mark Levinson brand to manufacture state-of-the-art electronic components.

In the mid-1980's the company was bought by Madrigal Audio, which continues to design and sell superb electronics under the Mark Levinson name — and under other brand names, too, such as Proceed. Meanwhile, Mark Levinson (the person) returned to his first interest, improving the sound of analog tape record-

on the same design principles and high-quality parts that are used in the best phono preamplifiers. Cello tape electronics are now used in many of the country's leading disc-mastering studios.

Other Cello products are used equally by audiophiles and recording studios. The best-known example is the Cello Palette, an equalizer based on circuit designs by the engineer/audiophile Richard Burwen. And when home theater became the fastest-growing segment of high-end audio, Levinson and his partners launched the Cello Music and Film division, selling Cello systems through dedicated showrooms in New York, Los Angeles, Milan, and Moscow.

Levinson also assembled a state-of-the-art digital recording system based on B&K measurement microphones, low-noise mike preamps, and two digital modules designed by Apogee Electronics — a superb 20-bit analog-to-digital converter and the Apogee UV-22 redithering processor. The latter recodes 20-bit recordings so that their finest details may be reproduced within the confines of the 16-bit CD format. The Cello system has led to three unique recording ventures:

- The Cello Cafe, opening soon in New York, will be an amplifier-free nightclub in which performances will be recorded live. After each concert, listeners will be able to hear the recording. Selected recordings will also be issued on CD.
- Gene Pope, manager of Cello's Moscow showroom, has launched a new CD label, PopeMusic. Using just one B&K mike per channel (no mixing!), the recordings capture spectacularly accurate dynamics. The label's first two releases have won rave reviews. One features ballet music by Shchedrin and Shostakovich recorded by Pope in the concert hall at the Moscow Conservatory. The other disc

Mark Levinson has been an influential force in high-end audio for two decades, but he's not an engineer. He's a musician.

ings, and started another company, Cello, Ltd., to develop state-of-the-art products.

The signal that is retrieved from an analog tape by the playback head is a very small waveform, typically measuring less than a thousandth of a volt. It must be amplified a great deal to bring it up to line level, and it also needs elaborate equalization to restore flat frequency response. But the preamplifier circuits in most tape recorders are considerably less sophisticated than a high-end phono preamp. Cello developed its own electronics package for use with studio tape recorders, based

is an album of pop vocals by Lori Lieberman recorded in the U.S. by Pope and Levinson.

- The Music Maker Relief and Recording Foundation is a joint project by Levinson and Tim Duffy to record authentic blues performers who are elderly and destitute in the rural South. Income from a \$100 sampler CD will provide medicine, food, housing, and further recording opportunities for the artists.

For more information on these projects, contact Cello at 41 E. 62nd St., New York, NY 10021; telephone, 212-472-5016. □

The ten second pitch.

Acoustic Research invented the modern home loudspeaker in 1954.

For over forty years, they have been the leader in bookshelf loudspeaker design, technology and sound reproduction.

To this day, you can not buy a better loudspeaker for the money. ■

The two minute pitch.

AR loudspeakers are designed for optimum performance in real world use.

Their sound patterns are designed to interact with the boundaries in your home - doors, bookshelves, walls, furniture - so they are less particular as to their exact placement.

Their wide baffle design and exposed dome drivers produce a wide and consistent sound field, resulting in a proper tonal balance from more listening positions throughout the room.

Due to their true *acoustic suspension technology*, they produce stunningly powerful and accurate bass from relatively small cabinet enclosures.

They are high-value, no compromise loudspeakers engineered with the essential materials and technology needed to reproduce superior sound. ■

The all day pitch.

No company in the history of audio has done more to improve the sonic accuracy of musical reproduction in the home than Acoustic Research.

For forty years, AR's sound philosophy has centered on the belief that technical innovation would only be incorporated for the benefit of tonal accuracy - not at its expense.

AR's design philosophy remains to this day, to focus and improve on the fundamental speaker technology needed to reproduce music as accurately and beautifully as the original source.

For AR, this means flat frequency response. Wide dispersion. Low distortion. High power handling. Exceptional bass extension. Musicality.

AR began its journey to capture sonic accuracy in

1954 with the introduction of *acoustic suspension technology*, an innovation which truly revolutionized the audio industry. Prior to AR's acoustic suspension design, loudspeaker technology primarily utilized some form of vented or baffled enclosure where a relatively stiff mech-

anical spring force was applied to the moving cone to return it to its resting position. This spring force tended to become increasingly non-linear in its action as cone movement increased from either higher output levels, lower frequency, or both.

In order to reproduce lower bass at higher output, large woofers were needed, resulting in larger cabinets. In addition, the large cones became more massive, and in order to maintain reasonable efficiency without an enormously costly magnet structure and voice coil assembly, cones had to be designed with low density. The net result was the loss of stiffness which resulted in driver "break-up" and uneven frequency response with resonance, thus trading one form of distortion for another.

AR's solution was the revolutionary AR-1, the first loudspeaker to use the air compressed inside the sealed enclosure to control the excursion (movement) of the woofer. The woofer was given a very "soft" mechanical suspension, including the now legendary "half-roll" surround. The voice coil and magnet pole piece were redesigned for long excursion while a very stiff cone was fabricated for rigid, piston-like action. The woofer was then mounted in an airtight enclosure. The trapped air within the speaker cabinet exerted consistent pressure on all points of the woofer to precisely and evenly control and dampen the woofer movement. The result of this *acoustic suspension* design was reduced distortion and greater bass response in a substantially smaller speaker enclosure.

(Story continued at your AR dealer) ■

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