

Stereo Review

JULY 1985 \$1.75

THE COMPACT DISC

IT'S HERE TO STAY!

**A LOOK AT THE
NEW CD PLAYERS**

**LAB TESTS OF THE
YAMAHA CD-X2 AND
SONY'S CDP-520ES**

**AMERICAN CONDUCTOR
MICHAEL TILSON THOMAS**

**ALSO TESTED
THIS MONTH:
RICH ACOUSTIC SPEAKERS
ADS CASSETTE DECK**



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IT'S WORTH IT.

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by Christie Barter and
Gordon Sell

CD HOTLINE

To assist consumers (and retailers) with questions about specific CD's or CD technology in general, a trade organization called the Compact Disc Group has established a toll-free telephone service from 9 a.m. to 5 p.m., Eastern Time, Monday through Friday.



The number to call is 1-800-872-5565 (in New York state, 1-212-355-0011). Callers will also be able to have their names added to the CDG mailing list for catalogs.

TRANSPARENT SOUND

Martin Logan has developed an electrostatic speaker with a see-through diaphragm and conductive coating. The full-range Curvilinear speaker's diaphragm is suspended midway between the perforated-metal electrodes. The driver system is shaped like the vertical 30-degree section of a tall cylinder. The as yet unnamed super-diaphanous-diaphragm speakers will cost \$2,400 a pair.

HI-FI RADIO SHOW

The National Public Radio network is now airing a weekly hour-long radio show for audiophiles that is being fed to seventy-two affiliated stations on Sundays at 2 p.m. Eastern Time. Show host John Sunier plays audiophile recordings on LP's, CD's, and tapes, gives helpful hints, and interviews interesting personalities in the recording and hi-fi fields.

HI-FI VCR'S TAKE OFF

Sales of hi-fi VCR's are expected to grow rapidly over the next six months as the machines become available at lower price points. High sales of Sanyo's low-priced and much-discounted Beta Hi-Fi recorders were a significant factor in that company's ousting of Sony as the best-selling Beta pro-

ducer. Panasonic is introducing four new VHS Hi-Fi machines starting at \$750. Other VHS makers are likely to follow, and you can expect discount stores to crack the \$500 VHS Hi-Fi barrier this fall. Sony and Sanyo are looking to the combination of Beta Hi-Fi and Super Beta (said to improve video resolution by 20 percent) to increase Beta's market share. Radio Shack will soon be selling both Beta Hi-Fi and VHS Hi-Fi VCR's, and Yamaha will introduce a VHS Hi-Fi machine with stereo-TV capability.

TECH NOTES

The Cambridge Audio CD1 Compact Disc player has three different analog-processing circuits, enabling a user to pick the one that sounds best. The price of this Philips-based English player is \$2,000. . . . Crown International has developed a bridgeable car amplifier that can deliver either 100 watts each to three channels, 100 watts each to two channels and 50 watts each to two other channels, or 50 watts each to four channels and 100 watts to one channel. . . . Shure has just celebrated its sixtieth anniversary. The company made its first microphone in the early 1930's and its first phono cartridge in 1935. . . . Some time in the next few months Matsushita (Panasonic and Quasar) will produce its 100 millionth color TV set. . . . B&W is going into the amplifier business with a mono 500-watt, \$2,500 unit based on the technology developed for the new John Bowers Active 1 powered speaker system. . . . Barclay-Crocker will be issuing prerecorded open-reel tapes using dbx rather than Dolby B noise reduction. . . . Carver Corp. is going public with a 700,000-share offering to finance expanded manufacturing and research.

HONORS

Soprano Leontyne Price and composer Elliott Carter were the two musicians who received the National Medal of Arts from President Reagan in a first-time-ever White House ceremony in April. . . . A prize given in the name of the President of France

by the Académie Charles Gros in Paris went this year to Murray Perahia's recordings, for CBS Masterworks, of the complete Mozart Piano Concertos. . . . Isaac Stern became the first classical artist to receive the Presidential Award of the National Association of Recording Merchandisers.

BIG SELLERS

Multi-Platinum Awards, presented by the Recording Industry Association of America, have gone to Cyndi Lauper's *She's So Unusual*, which has sold in excess of four million units, and to Twisted Sister's *Stay Hungry*, the group's first two-million seller. Under RIAA rules, an album that has sold one million copies receives Platinum certification. It becomes eligible for Multi-Platinum recertification every time it achieves another million in sales.

FUND RAISERS

The Concert Music Broadcasters Association reports that nine of its member stations raised well over two million dollars this spring in radio marathons for their local symphony orchestras. Included were WQXR in New York, which brought in (in round figures) \$410,000; WCRB in Boston, \$360,000; and WGMS in Washington, D.C., \$280,000. But ahead of them all was WFMT in Chicago, which raised \$570,000 for the Chicago Symphony. A feature of the WFMT marathons is the annual tally of donations made respectively by cat lovers and dog lovers. This year, for the first time in several years, the cat lovers won by a hair.



TERRY ALLEN



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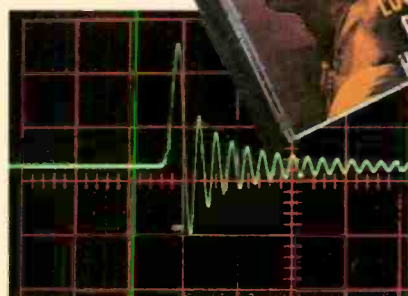
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by William Livingstone



Miss Aiken

SOME job titles conjure up vivid pictures of the people who hold the jobs. Editor in Chief? Geronimo or Crazy Horse with blue pencils. Managing Editor? A cross between a traffic cop and the bank officer who says "yes" or "no" to your loan applications.

But what about Editorial Assistant? Is that a fancier way of saying secretary? Not at STEREO REVIEW, where the four editorial assistants collaborate with the editors in ways that go beyond what could be expected of a clerk, secretary, or Man Friday.

All four do a lot of typing, filing, and photocopying, but each has specialties that make his or her job unique, and every issue of the magazine bears the imprint of Barbara Aiken, Rocco Mattera, William Neill, and Fran Rosenblatt.

The senior assistant, Barbara Aiken, came to the staff in 1972 as secretary to Larry Klein, who was then Technical Editor. A native New Yorker, Miss Aiken had previously worked for a couple of hotel and hospital unions. Her first job in publishing appealed to her "because it was less repetitious than secretarial work for the unions. I had more freedom here, and the job presented a greater challenge because there were many new things to learn."

In time Barbara learned so many administrative procedures that her desk became the nerve center of our technical department, and in 1977

her job was reclassified. She now presides over files of press releases, product photos, and technical drawings, and she logs in manuscripts and sees that contributors get paid.

Vast quantities of hi-fi equipment pass through our offices every year, and Barbara tracks the progress of each unit from the factory to our office to the photographer's studio to Hirsch-Houck Labs and back again. Understandably, this requires a lot of time on the telephone. When asked to write a description of her job, Barbara listed among its requirements "an effective telephone personality plus a sense of diplomacy and knowing when to be persuasive and when to be firm and aggressive."

She works most closely with Technical Editors David Ranada and Gordon Sell on such projects as soliciting equipment for testing or roundup reviews and requesting product photographs for technical articles. She also works with Associate Editor William Burton in gathering information for our four annual directories and buying guides (sold on newsstands).

The hardest part of her job, she says, "is working for three creative (sometimes temperamental) editors who, when under pressure, give orders that are difficult to understand or interpret." The part of her job she likes best, however, is the stimulation of working for those same three creative (sometimes temperamental) editors.

Barbara has developed so many first-name friendships with hi-fi manufacturers that she is STEREO REVIEW's official hostess at such functions as the luncheons the magazine gives at the Consumer Electronics Show in Las Vegas. She is the social secretary of the technical and administrative staff in that she keeps track of which editors cover which press conferences.

Making our hotel and travel arrangements to CES in Las Vegas and Chicago when 100,000 other people are competing for choice room and flight reservations requires that Barbara shift into firm and aggressive mode. When she is functioning as travel coordinator, her position is best described by the title of Mick Jagger's latest album: "She's the Boss." □

Stereo Review

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Emmylou Harris

In Emmylou Harris's "The Ballad of Sally Rose," country music has its first "Sgt. Pepper." Thanks for Alanna Nash's great article [May] about a great artist.

DICK LOFTIN
Tulsa, OK

The May article on Emmylou Harris prompted me to purchase the Compact Disc of "The Ballad of Sally Rose," among other things because the article said it had been recorded digitally. I bought the disc even though the usual Warner Bros. analog disclaimer appears on the box, which would lead me to believe that the recording was in fact of analog origin. To my ears this new and excellent disc does sound digital since there's no extraneous noise. Who is right and who is wrong in this case?

In addition, Warner Bros. lists twelve tracks on the CD label though there are thirteen on the disc, which could make cueing to a desired track somewhat confusing.

EDWARD R. WHITE
Vancouver, B.C.

Despite Warner Bros.' labeling, the recording was made digitally, and the CD has the same thirteen tracks as the LP.

Who Needs Car Stereo?

In the May issue you write of evaluating "stereo equipment in a car." Surely it must be rare for a car to be so equipped, since driving is an activity one would not care to combine with listening to music. Anyway, only the very unfortunate (traveling salesmen, cab drivers, et al.) are ever inside an automobile for over fifteen minutes at a time, which is not long enough to hear a complete composition of any consequence. Therefore, music lovers will generally put "all they can afford, and then some" in home equipment exclusively.

HARLAN SPORE
No. Little Rock, AR

Audio Q. & A.

Magazines like STEREO REVIEW serve as a medium for audiophiles to express their concerns and doubts about sound reproduction and to receive advice

from experts. Departments like Larry Klein's "Audio Q. & A." are indispensable. It was hard to believe that not one page was devoted to it in the April issue. As one who owns such high-end units as a three-head cassette deck and a CD player and has yet to experience consistently trouble-free performance, I would definitely like to read and contribute questions to "Audio Q. & A." God forbid that it disappear; otherwise I just might have to do more listening and less reading.

S. SERRALHEIRO
Montreal, Quebec

Bent Out of Shape

I was shocked and disgusted by the language used in Steve Simels's "Rock Gender Benders." I would hope that your editing staff has enough command over the English language to catch and change such vulgar words as f--- and b--- even if your contributing editors do not. I would greatly appreciate your efforts to uphold the high standards shown in the rest of the magazine.

GARY D. LINDBERG
Simi Valley, CA

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Stereo Review

I was extremely pleased to see the article "Rock Gender Benders" in April. Rarely do I read articles in STEREO REVIEW that aren't audio oriented. This was an excellent exception. My applause to author Steve Simels as well as to the editors for printing it.

JEFF DIMOCK
Winston-Salem, NC

The Over the Hill Gang

I am fed up with these young snots who make obnoxious remarks about the older generation. Matthew Hagny, in May "Letters," accuses your music critics of being too "ancient" to express an opinion on rock "music." Apparently, in his eyes, anyone over thirty-five is old and senile and incapable of making a valid statement on rock. Hogwash! We "old" folks have been exposed to more real music in our lifetimes than these young squirts will ever be privileged to hear. Rock, in my opinion, is a product of the electronic age. Rock musicians are inventions of audio engineers. Modern recordings bear little resemblance to original performance, if there was an original performance.

I spent several painful long years of "listening" to rock music through the ceiling while my kids were at home. Well, the kids have gone their separate ways, and they are missed, but I do not miss the god-awful racket that used to rattle every window in the house. Now, at last, I can play my theater-organ records and rattle the windows to my own satisfaction.

FRANK BUZZELL
Spring Lake, MI

The statement in May "Letters" that STEREO REVIEW's popular-music critics are "hypercritical and prejudiced against modern music, especially heavy-metal rock-and-roll" couldn't be further from the truth. Though I enjoy much of today's new music, a large majority of it is performed by ersatz musicians playing ersatz music to make a quick buck, and your reviewers, such as Steve Simels, realize this. Case in point: Duran Duran (and I admit to being a closet fan of theirs).

I'm only twenty-three, so I don't consider myself over the hill or ancient for at least two more years. Keep up the good work. Here's one fan of modern

music who appreciates a good, cranky review.

DAVID CLAGHORN
Vero Beach, FL

Antennas

Julian Hirsch's article on antennas in the May issue was well written and informative, but he overlooked one of the most important parts of an antenna system: the lead-in cable. An antenna can be rendered useless by an improper lead-in cable, particularly 300-ohm flat ribbon cable. Very often people treat such cable as if it were a coaxial cable, taping it to the antenna mast and routing it without the stand-off insulation, etc., required to keep the signal flowing to the receiver. The casual installer is probably better off using coaxial cable and avoiding such problems.

WALTER W. BRUEHL
Parachute, CO

Julian Hirsch replies: You are quite right, but I was referring throughout the article to a correct antenna installation. It is possible to botch up anything by careless or incorrect procedures.



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NEW PRODUCTS



Advent

Called the "big brother" of the Baby Advent speaker introduced last year, the Advent Prodigy features an 8-inch woofer with a high-excursion surround and aluminum voice-coil bobbin for a power-handling capability of more than 75 watts. The woofer is combined with a 3/4-inch Ferrofluid-filled soft-dome tweeter that is said to provide optimum imaging. Frequency response is given as 48 to 22,000 Hz \pm 3 dB. Distortion is rated as less than 1 percent above 80 Hz with a 1-watt input. The crossover frequency is 3,000 Hz.

The Prodigy measures 22 inches high, 13 inches wide, and 8 3/8 inches deep. It weighs 22 pounds. Pecan-wood end caps and black textured vinyl provide the finish over dense fiberboard construction. Price: \$299 per pair. Advent, Dept. SR, 4138 N. United Parkway, Schiller Park, IL 60176.

Circle 120 on reader service card

Hitachi

Hitachi's HTA-70F receiver includes a seven-band graphic equalizer, a seven-band fluorescent spectrum analyzer, and fluorescent power meters. The digital-synthesis AM/FM tuner has twenty



station presets. Its stereo 50-dB quieting sensitivity is rated as 38.2 dBf, and channel separation is 40 dB at 1,000 Hz. Function controls are light-touch push-buttons, and electronic pushpads adjust volume and balance.

The receiver is rated to deliver 70 watts per channel from 20 to 20,000 Hz with no more than 0.03 percent total harmonic distortion. The signal-to-noise ratio in the phono section is 72 dB. Price: \$579.95. Hitachi Sales Corp., Dept. SR, 401 West Artesia Blvd., Compton, CA 90220.

Circle 121 on reader service card

JVC

Four new JVC cassette/receivers for the car are led by the KS-RX450, which has 22 watts per channel and Dolby B noise reduction. The digital PLL frequency-synthesis tuner automatically selects the closest strong station if the one being received becomes too weak for clear reception. A tuner noise-control circuit reduces interstation noise. When the signal is blocked by obstructions, a separation circuit and high-cut filter help to screen out noise. There are twenty station presets and a local/distant button.

Line-level input and output terminals are included, along with a preamp fader control and separate bass and treble



controls. The tape section can play back chrome and metal tape and has an ignition-key-off release to protect cassettes from damage. Price: \$399.95. Other models in the line are priced as low as \$229.95. JVC, Dept. SR, 41 Slater Dr., Elmwood Park, NJ 07407.

Circle 122 on reader service card

TDK

The MP series of 8mm video tapes from TDK uses a new high-density magnetic material called Super Finavinx, said to be a "super-microscopic" metal-powder formulation. The tape is also said to have a more durable magnetic-particle binding system that reduces noise levels and helps prevent dropouts and irregularities. The energy capacity of Super Finavinx is rated as four times that of typical 1/2-inch video tape. For greater smoothness, irregularities in the base film have been reduced to 0.02 micrometer or less. The MP tape may be used for either frequency-modulated or digital PCM recording. Prices:



30-minute length, \$14.99; 60-minute length, \$16.99. TDK Electronics, Dept. SR, 12 Harbor Park Dr., Port Washington, NY 11050.

Circle 123 on reader service card



Panasonic

The RQ-92 Karaoke Songmate sing-along machine from Panasonic includes a double cassette deck, a microphone, and a 7-inch speaker. The double deck enables singers to mix their live vocals with instrumentals from one tape onto a blank tape. There are two mike inputs and an electric-guitar jack with a separate volume control. A variable electronic echo gives the illusion of depth to vocals. A tape-speed dial can raise or lower the playback pitch of a recording by as much as 12 percent to fit the singer's vocal range. A headphone jack is included. Price: \$299.95. Panasonic, One Panasonic Way, Secaucus, NJ 07094.

Circle 124 on reader service card

Pioneer

Pioneer's PD-5010 Compact Disc player incorporates the company's Linear Servo System and a Disc Stabilizer



for improved tracking. Scanning can be done at two speeds with the program audible. The player can be programmed to play back twenty-seven tracks in any order, and the programmed sequence or the entire disc may be set to repeat. Controls allow skipping back to the beginning of the current track or forward to the beginning of the next track. A headphone jack is included. The drawer-loading player is finished in black. Price: \$299. Pioneer Electronics, Dept. SR., P.O. Box 1720, Long Beach, CA 90801.

Circle 125 on reader service card

NEW PRODUCTS



Energy Loudspeakers

The Energy ESM-3 two-way ported bookshelf speaker pairs an 8-inch polypropylene woofer with a 3/4-inch polyamide soft-dome tweeter cooled with Ferrofluid. The woofer is claimed to have quick transient response and low distortion. Strategic bracing and damping are said to eliminate enclosure resonances. Price: \$250 per pair. Optional matching floor stands are available for \$35 each. Energy Loudspeakers, Audio Products International, Dept. SR, 135 Torbay Rd., Markham, Ontario L3R 1G7.

Circle 126 on reader service card



Radio Shack

The Archer Video/Audio Control Center from Radio Shack can be used to switch base-band video signals among two video-cassette recorders, a video-disc player, another audio or video source such as a TV receiver, an external processor, and a video monitor. Several components connected to the control center can be operated at the same time without changing any connections. The Archer switcher is said to eliminate the need to reintroduce TV-broadcast frequencies when transferring video signals. Price: \$69.95. Radio Shack, Dept. SR, 1800 One Tandy Center, Fort Worth, TX 76102.

Circle 127 on reader service card

Denon

The tone arm of the Denon DP-23F fully automatic, direct-drive turntable

has a built-in electronic control system that replaces mechanical damping elements, springs, and weights. Both anti-skating and tracking forces are electronically controlled. Tracking force can be set between 0 and 3 grams for cartridges weighing from 4 to 9 grams. The Dynamic Servo Tracer system in the tone arm is said to effectively cancel arm and cartridge mass. The motor is a linear-drive (non-cogging) model governed by



magnetic sensing, with the rotation speed compared to a PLL quartz oscillator. The wow-and-flutter rating is given as 0.003 percent wrms. Price: \$225. Denon America, Dept. SR, 27 Law Dr., Fairfield, NJ 07006.

Circle 128 on reader service card

Southern Audio Services

A tube-shaped car bass speaker called the Bazooka is intended to be installed behind the front seats of small trucks without impeding movement of the seats. It will also fit in the rear corners of a hatchback, stationwagon, or van. The speakers may be placed on end or laid horizontally. With horizontal placement, the open end of each tube should be 3 inches from a corner of the vehicle's interior. Such "corner-loading" placement is said to be the most effective for this speaker.

A bass-reflex system with a port just over the front of the driver, the Bazooka has a 6 1/2-inch woofer. Nominal impedance is 4 ohms, and maximum suggested amplifier power is 200 watts. Rated frequency response is 45 to 1,500 Hz. A 1-watt input is said to produce a



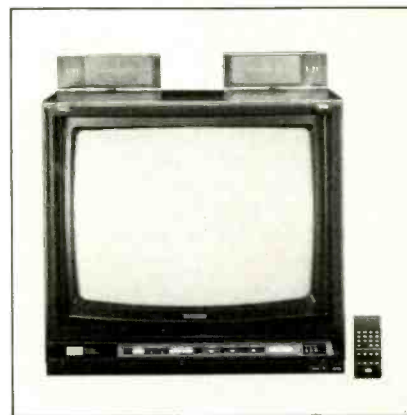
98-dB sound-pressure level in a typical installation. Connection is by spring-loaded terminal clips. The high-impact plastic enclosure measures 18 inches long. Price: \$179.95 per pair. Southern Audio Systems, Dept. SR, P.O. Box 1515, Denham Springs, LA 70727-1515.

Circle 129 on reader service card

Sansui

The SV-M25 color video monitor/receiver from Sansui has a high-resolution 25-inch picture tube with 100-degree deflection. A built-in stereo amplifier with 5 watts per channel is connected to two magnetically shielded speakers, which can either be placed on top of the cabinet or mounted on the sides. An MPX jack is provided for connecting an adapter to decode broadcast stereo sound. A MULTI DIMENSION switch simulates stereo from mono sources and increases the channel separation and dynamic range of stereo programs.

The random-accessed electronic-synthesis tuner can receive twelve VHF, seventy UHF, and fifty-eight cable channels. Most of the controls are located beneath the screen in a flip-down panel. They can also be adjusted with the infrared remote control.



Horizontal resolution, improved by the comb filter, is 400 lines. Precise control of the electron beam is said to eliminate problems with convergence and linearity. The stable power supply is said to produce a wider dynamic range of whites to blacks. Output jacks for video and stereo audio signals allow the SV-M25 to be connected to a projection TV or to a second monitor. Input jacks accept the audio and video signals of a VCR or video-disc player. The SV-M25 measures 25 3/8 inches wide, 24 inches high, and 20 3/8 inches deep. It weighs 100 pounds. Price: \$1,000. Sansui Electronics, Dept. SR, 1250 Valley Brook Ave., Lyndhurst, NJ 07071.

Circle 130 on reader service card

ULTRX

THE LEGEND GROWS

The premise behind Ultrax was to develop the benchmark products of the audio industry. Products whose superior performance became the level against which competitors are compared.

We brought no preconceived notions or outdated concepts to the designer drawing board. Instead we combined the sonic accuracy of home stereo with leading edge micro-circuit technology for the ultimate in car stereo.

The UDR-100 is our proudest achievement. It offers 3 noise reduction systems: Dolby B and C, for compatibility with your present tapes, and dbx, which allows you to capture the phenomenal dynamic range of compact digital discs. Advanced tape head technology delivers true 30 Hz to 17 KHz response, a range usually

reserved for expensive home decks. Built-in power amps provide 15 watts RMS of incredibly pure music power per channel. And CompuLock™ digital tuning insures tuned accuracy to within a few cycles per million.

The UDR-100 also comes equipped with auto-reverse, automatic music search, selectable 100 Hz or 300 Hz bass equalization, dual mode FM scanning, 18 station presets, and a built-in fader.

But great features are only great if they're easy to use. So we invented AutoMode™, computerized system control. Knobs are replaced with precise electronic volume, bass, treble and balance controls... sized for human fingertips and fitted with a night illumination system.

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Beyond the Ordinary.

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Peter Aczel, THE AUDIO CRITIC

350 watts/rms/chan. into 8 ohms, 20-20 kHz with less than 0.5% THD. And most importantly, the rating that is musically significant: 600 watts/chan. Long-Time Period Reserve Power with 750 watts/chan. Dynamic Headroom. Weight: 16 lbs.



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CIRCLE NO. 49 ON READER SERVICE CARD

NEW PRODUCTS



Alpine

A folded-horn effect is created by the Alpine 6490 car subwoofer when its opening is directed toward the corner of the vehicle's interior. The speaker has an airtight acoustic-suspension chamber and an acoustic labyrinth between the driver and the opening. It is intended for use in a hatchback, station wagon, pickup, or recreational vehicle. It can be used with amplifiers rated at up to 150 watts per channel. The bandwidth of the 6490 is 30 to 500 Hz. Mounting flanges and quick connectors for speaker wires are provided. The enclosure measures 20 x 7 $\frac{3}{4}$ x 5 $\frac{3}{8}$ inches, and the unit weighs less than 13 pounds. Price: \$250 per pair. Alpine Electronics, Dept. SR, 19145 Gramercy Pl., Torrance, CA 90501.

Circle 131 on reader service card



Spectrascan

The flat, wide-band input buffer-amplifier in the Spectrascan LCA-10 stereo preamplifier is followed by a passive RIAA equalizing network and another output buffer-amplifier. The combination is said to provide low noise levels and immunity to phono overload. Differential and complementary bipolar circuitry is designed for maximum linearity with a minimum of feedback. Cartridge reactance is isolated from the RIAA network, and load capacitance is switchable to match any cartridge.

The LCA-10 has inputs for phono, tuner, CD, video/aux, and two tape decks, with provisions for dubbing in either direction. A record-selector switch permits recording from one source while listening to another. Price: \$1,095. Spectrascan, Inc., Dept. SR, 5923 N. Nevada Ave., Colorado Springs, CO 80907.

Circle 132 on reader service card

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"Spectacular"

Stereo Review

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"You owe it to yourself!"

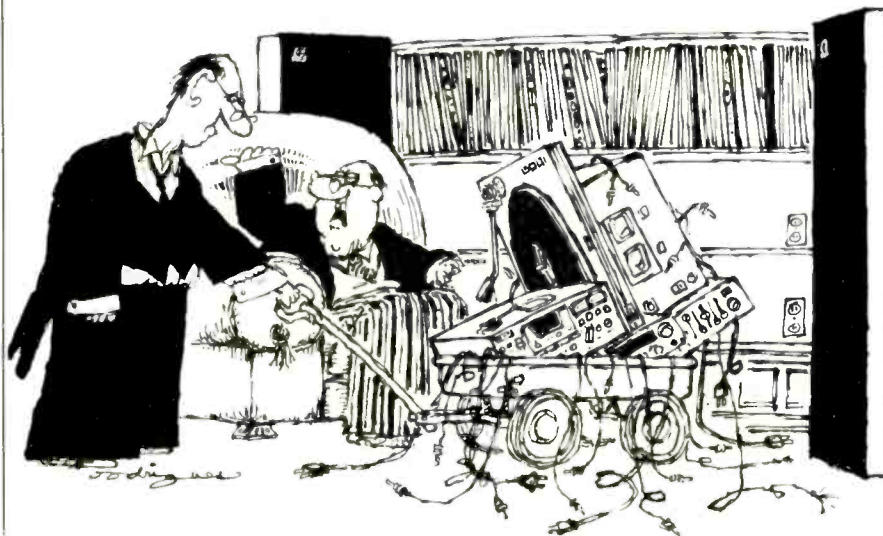
High Fidelity

*U.S. Patent No. 4,439,432. Other patents pending.

Canadian Distributor: Evolution Audio

Polk Audio Inc.
1915 Annapolis Road Baltimore, MD 21230

The Winner Of
THE RODRIGUES CAPTION CONTEST



Manchester! Carry out the usual 15-yard clipping penalty!

THE response to our cartoon caption contest has been overwhelming. In our issue of January 1985 we published a drawing by our regular cartoonist Charles Rodrigues and invited readers to suggest captions for it. The prize offered for the caption that was funniest (in the opinion of the judges) is \$100 and Rodrigues's signed original drawing of Mr. Tweakingham and his faithful retainer Manchester.

The winner is Thomas Briggie, of Akron, Ohio, who submitted the caption under the drawing above.

The editors deeply appreciate the great outpouring of warmth toward the magazine and the affection for Rodrigues and his work that were expressed in the many notes and letters accompanying the entries. Submissions came from all over North America and as far away as Guam, Israel, Poland, and Australia.

The entries fell into a number of categories. For example, many people interpreted the drawing to mean that Tweakingham was giving up his components in a divorce settlement. The largest category dealt with abandoning complex components for the simplicity of earlier equipment. There were hundreds of entries along the lines of "And bring back my Victrola . . ." or Philco, Atwater Kent, and so forth.

The caption most frequently duplicated verbatim was "I want my MTV." In second place was "Next!" Many readers suggested that the

equipment was being discarded because it had been tainted by music not to Tweakingham's liking. The artists most frequently mentioned in those entries were Twisted Sister, Boy George, Van Halen, and Slim Whitman.

A large number of readers thought Tweakingham was having the equipment hidden to protect it from grandchildren coming for a visit. There were a lot of digs at the speed with which equipment becomes obsolete and many jokes about car stereo, including frequent references to the Edsel.

The classical composer referred to most often was Beethoven. The most frequently mentioned composition (predictably) was Tchaikovsky's *1812 Overture*, with Ravel's *Boléro* next. Artists mentioned often included Leonard Bernstein, Zubin Mehta, Luciano Pavarotti, Joan Sutherland, Michael Jackson, Prince, and Cyndi Lauper.

For the many who asked, we feel obliged to report that Rodrigues himself did not have a caption in mind. He was extremely curious to know what words you would put into Tweakingham's mouth.

If your entry does not appear among the runners up at right, you now know how Johnny Carson must feel on nights when his monologue falls flat. But stick around. We've had so much fun with this contest that we'll probably have another one next January.

—William Livingstone

Runners Up

... And set up the Victrola in the parlor! By Hogwood, if they can use original instruments, so can I!

TOM BURKHARD
Bethpage, NY

... And while you're there, you can weed the zinnias in the Elcaset plot.

ROBERT BASS
Galveston, TX

If I'd wanted to hear the rustling of the programs, I'd've gone to the goddam concert.

JACK LAIRD
Hollywood, CA

No arguments, Manchester! Hook them up once more, put the wagon back in the shed, come straight back to the den, and when you hear me yell "Fire"....

STAN BERNSTEIN
Bossier City, LA

Remember, *outside* the city limits. I don't want it crawling back here tomorrow.

NORM KRAACK
Austin, TX

Tell them it was good on the *1812* and *Wellington's Victory*, but I couldn't hear a single shot on that Pachelbel thing.

PAUL A. ALTER
Hyattsville, MD

Special Honorable Mention

Manchester, that's *not* my idea of Mobile Fidelity.

DOUG SAX
The Mastering Lab
Los Angeles, CA

I don't care what they said about it in *Stereo Review*! The editors of *High Fidelity* say it's junk, so out it goes!

THEODORE W. LIBBEY JR.
Music Editor, *High Fidelity*
New York, NY

The Dolbys are coming to dinner—bring out the good stuff.

KAREN BOWMAN
BOB LANSDON
Dolby Labs
San Francisco, CA

HI-WAY HI-FI



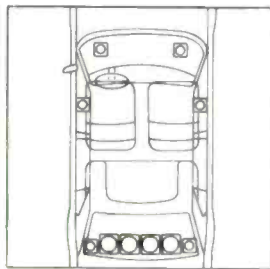
The Deciding Factor

As a "music room," a car presents considerable problems: tight and cramped, half upholstery, half glass – and filled with road noise. What's true in the living room is especially true here: good sound depends upon the loud speakers and their positioning.



New! From Canton

With the new Set 200 and Set 300 line of flushmount woofers and tweeters, Canton now offers added versatility to the installation of automotive sound systems. Whether mounted in the front, the side doors or the back deck, Canton offers you auto fidelity with strong bass, rugged durability and excellent dynamics –



it is these "Sets" that received the highest test awards in Germany's *Stereoplay* magazine 3/84 for quality in accurate, powerful sound reproduction.



Other Solutions and Complements

To round out our auto sound product line, we offer surface mount speakers as well. Our HC 100 pictured above is also available in a self-contained, bi-amped configuration for added versatility (AC 200). In addition, we offer the Pullman 3-way system for rear deck mounting as another innovative solution to quality auto sound in surface mount configuration.



Comments from Canton

Klaus Dotter, Canton's chief acoustic engineer, stresses that there is no one "right" solution for every auto installation. However, choosing quality components, from the electronics to the speakers, should be first and foremost in your selection of quality auto sound.

Find out more about Canton quality home and auto sound – write or call for our informative full line brochure.

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CIRCLE NO. 33 ON READER SERVICE CARD

by David Ranada



Camera and Picture Tubes

EXCEPT for a few high-end cultists, audio has abandoned the vacuum-tube technology that gave it birth. But in video the tube still reigns supreme; a vacuum tube is at the heart of nearly every video camera and television or monitor screen. Scanning may be the core of video theory, but cathode-ray tubes are the foundation of video practice. A basic understanding of how they apply the principle of scanning to image transmission should be part of every videophile's education.

Despite their locations at opposite ends of the video chain, camera tubes and picture tubes are both cathode-ray tubes and are based on the principle of the *electron gun* (see illustration). In an electron gun, negatively charged electrons are "boiled" off a heated metal plate (the cathode), then pulled—not shot—toward the front of the tube by means of very strong electrostatic fields (the same kind of fields that create sparks between your fingers and doorknobs on dry days).

The fields are created by the application of very high positive voltages to some of the tubes' internal parts. For example, the highest voltage in a picture tube occurs right at the phosphor screen; a large-screen color tube can have a charge of

30,000 volts—internally. The specially shaped electron-accelerating structures, called "grids," also serve as electrostatic lenses to focus the otherwise chaotically drifting electrons into a very tight beam, or a "cathode ray."

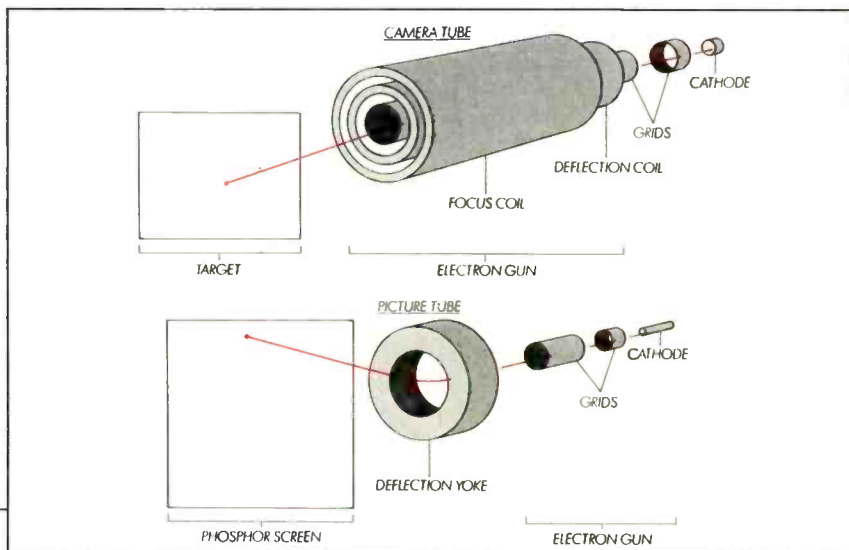
The direction of electrons moving in a vacuum can be changed by magnetic fields in addition to electrostatic fields, and camera-tube electron beams are usually focused by means of magnetic fields. The magnetic fields are generated by coils surrounding the actual vacuum-tube portion of a camera tube. With both types of tubes, electromagnetic coils are responsible for steering the beam in the required interlaced scanning pattern. About half the circuitry in a camera or monitor is devoted to generating the vertical and horizontal sweep signals that drive these deflection coils. Picture-tube coils are mounted in a simple-looking assembly called a *deflection yoke*, the design and alignment of which is critical for picture quality, though it rarely receives attention in ads.

It's in what happens at the business end of the electron beam that the major differences between camera and picture tubes really show up. In a camera, the beam hits a photosensitive *target*, on the other side of which has been focused the original optical image. The target is photoconductive; its electrical resistance at any point on its inner surface varies in proportion to the amount of light hitting its outer surface. Therefore, an electron beam sweeping over the target generates a

varying voltage in the tube-output circuits. This voltage is proportional to the light intensity on the target at the location of the beam, which is how the optical image is transduced into an electrical signal.

In contrast to the camera tube's photosensitive target, the inner front surface of a picture tube is coated with chemicals called *phosphors* that glow when struck by high-energy electrons. As the electron beam from the back of the tube sweeps over the phosphor coating, it produces a glowing spot. The intensity of the glow depends on the intensity of the beam. That intensity is controlled by the first grid the electrons pass on their way to the screen, and that grid is fed a signal originally generated by an electron beam in a camera tube. As the electron beam sweeps out its raster, an electrical signal is transformed back into an image.

For a concrete demonstration of part of this process, try this experiment to determine which end or side of a magnet is its north pole. Simply hold the magnet up close to a monochrome picture tube while the set is on (*do not* do this experiment with a color set unless you know how to degauss a picture tube). The picture around the magnet will warp as the magnet's field deflects the electron beam. Areas where the picture twists clockwise are near the magnet's north (more properly, north-seeking) pole; counterclockwise warpage indicates the south pole. There are simpler ways to earn a merit badge in magnetics, but they aren't as high-tech! □



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ROMANCING THE STONE	0894092	CASABLANCA	0507082	EXCALIBUR	6021022
SPLASH	5304022	TOOTSIE	1509042	TIGHTROPE	6051052
THE BIG CHILL	1527022	DUMBO	5251052	BACHELOR PARTY	0926012
WARGAMES	0828002	THE AFRICAN QUEEN	0511022	COUNTRY	5341072
RISKY BUSINESS	6033082	DN GOLDEN POND	0513082	BODY DOUBLE	1713062
THE NATURAL	1649052	THE LONGEST DAY	0517032	REVENGE OF THE NERDS	0925022
STAR WARS	0564162	DIRTY HARRY	6017082	GREYSTOKE—THE LEGEND OF TARZAN, LORD OF THE APES	6045042
YENTL	0895082	STRIPES	1513082	EDUCATING RITA	1593012
HIGH ROAD TO CHINA	6022012	FUNNY GIRL	1511002	THE ROAD WARRIOR	6028052
CADDYSHACK	6023022	CHRISTINE	1580062	SUPERMAN III	6040092
MAKING MICHAEL JACKSON'S THRILLER	7103012	OCTOPUSSY	0856052	TWILIGHT ZONE—The Movie	6034072
KING KONG (The Original)	5502022	PORKY'S	0775112	ANNIE	1516052
POLICE ACADEMY	6049002	CLOSE ENCOUNTERS OF THE THIRD KIND—Special Edition	1510012	THE MUPPETS TAKE MANHATTAN	0923042
ARSENIC & OLD LACE	0735102	THE RIGHT STUFF	6043062	ALIEN	0002322
THE COMANCHEROS	0762242	NATIONAL LAMPOON'S VACATION	6039022	THE MAGNIFICENT SEVEN	0534212
KARATE KID	1710092	TRON	5263012	THUNDERBALL	0709042
PRIVATE BENJAMIN	6018072	ARTHUR	6024092	BUTCH CASSIDY & THE SUNDANCE KID	0517362
SHE WORE A YELLOW RIBBON	5504002	ROOSTER COGBURN	1018082	PURPLE RAIN	6048012
RED RIVER	7507032	NEVER SAY NEVER AGAIN	6042072	THE MALTESE FALCON	0508072

RADIO SHACK REALISTIC 12-1909

by Julian Hirsch and
Christopher Greenleaf

HEADING the current Radio Shack line of car stereo components is the new Realistic Model 12-1909 cassette player/receiver. The tape section features solenoid-activated autoreverse, Dolby B, switchable equalization (normal or chrome/metal), and automatic disengagement of the pinch-roller when the car's ignition is switched off. The fast-wind controls and eject button are mechanically activated.

The quartz-locked frequency-synthesis AM/FM tuner features phase-locked-loop FM stereo reception, six preset buttons each usable for one AM and one FM station, and a yellow LED frequency display that doubles as a twelve-hour digital clock (the time is normally displayed except while tuning or for a few seconds after pressing the frequency-display button). Rocking the tuning knob to either side advances the tuner up or down the spectrum in the usual increments (0.2 MHz for FM, 10 kHz for AM). When the knob is pushed, the tuner seeks the next receivable station upward; if the knob is held in, the tuner continues scanning upward until the knob is released.

The receiver has center-detented treble, bass, and balance knobs. The loudness button boosts the response 9 dB at 125 Hz and 5 dB at 6,300 Hz. There is a mono button for FM, and indicator lights show tape direction, radio band, stereo reception, noise reduction on, and memory on (for programming the presets).

There are connections for ignition-switched power, grounding, clock and memory maintenance power, a trigger lead for an external power amplifier or an automatic antenna, and the antenna lead itself. The built-in amplifier is rated to deliver 15 watts per channel into 4-ohm loads. The four speaker wires,



which must be carefully isolated from the car's ground and from each other, can lead either to a pair of 4-ohm speakers or (with Radio Shack's optional balance/fader attachment) two pairs of 8-ohm speakers.

The Realistic 12-1909 measures 1 $\frac{3}{4}$ inches high, 7 $\frac{3}{32}$ inches wide, and 6 inches deep. Like all Radio Shack products, it is available only in Radio Shack stores. Price: \$249.95. Radio Shack, Dept. SR, 1700 One Tandy Center, Fort Worth, TX 76102.

Lab Tests

Like a number of other car stereo manufacturers, Radio Shack rates its products' FM performance using various unofficial (and undefined) test procedures that sometimes prevented us from comparing our test results with the published ratings. Nevertheless, we found that the Model 12-1909's FM section performed in a very satisfactory manner. Although its distortion was not as low as that of most home receivers, it was fairly typical of car radios, and the usable sensitivity and 50-dB quieting sensitivity were quite good. Image rejection was *far* better than rated (84 dB versus 43 dB!), but the very good AM rejection was somewhat offset by a merely fair capture ratio.

The alternate-channel selectivity was highly asymmetrical, measuring 100 dB on one side of the signal and only 51 dB on the other. Although we do not ordinarily adjust the generator frequency when measuring the selectivity of a digi-

tal-synthesis receiver (since in actual use neither the tuner nor the station frequency can be adjusted to optimize performance), we did confirm that the lopsided selectivity was the result of tuner (mis)alignment in our test sample rather than tuning error.

The FM tuner has an automatic channel-blend circuit that resulted in effectively mono reception at moderately low signal levels, although the stereo light remained on until we dropped the signal to 16 dBf (1.75 microvolts). This effect also is typical of car radios, whose stereo indicators show only that the station is transmitting a stereo pilot carrier (not necessarily a stereo program) and say nothing about whether the output to the speakers is stereo or mono. We did find that the FM channel separation of the Model 12-1909, more than 45 dB in the midrange, far surpassed its 30-dB rating. The AM tuner section's frequency response was somewhat unusual—a prominent peak at 80 Hz along with the typical early rolloff of high frequencies.

The audio amplifier, measured through the FM tuner (we used 30-percent modulation in an unsuccessful effort to reduce the tuner distortion sufficiently to reveal amplifier distortions), had good tone-control and loudness-control characteristics. At 1,000 Hz the output clipped at 12.25 watts into 4 ohms and 8.8 watts into 8 ohms. Although this did not quite match the manufacturer's 15-watt rating, the discrepancy was negligible by the usual standards applied to car radios.

HIRSCH-HOUCK LAB MEASUREMENTS

The tape deck had an excellent frequency response with both normal (120- μ s) and chrome/metal (70- μ s) equalization. There was a small difference between the response measured in the forward and reverse directions (it was flatter in reverse) but not enough to affect the listening quality significantly. Judging by the relatively steady output level at high frequencies, the tape-to-head contact was good. The flutter was somewhat lower in reverse but was satisfactory in either direction. Tape speed was 0.6 percent slow in either direction and at any part of the tape.

With the noise reduction off, the tape signal-to-noise ratio (S/N) was 55 dB A-weighted and 46.5 dB CCIR weighted. The Dolby system improved these measurements by 9 to 10 dB. Using the chrome/metal equalization added another 1-2 dB to the S/N figures. The fast-forward and rewind speeds were slightly faster than rated, 127 instead of 140 seconds for a C-60 cassette. *J.H.*

Road Tests

On the road, the Realistic 12-1909's digital tuner provided quick, firm, and accurate station selection using any of its three tuning modes: manual, seek, and scan. Its FM stereo performance was fairly immune to the worst interference effects of city driving, and outside the city I was able to get listenable stereo out to average limits (20 to 30 miles) under normal reception conditions. Using the FM mono button (a most welcome option) extended the range a bit, to around 40 or 45 miles, but not to the 50-mile limit I have sometimes achieved with other, more costly tuners.

Whatever high-blend circuitry is included to quiet FM stereo appeared to work in an on/off fashion rather than continuously. It was, therefore, fairly obvious when it cut in, but the effect was not bothersome. Overall, the FM sound was typically clear, with well-reproduced natural timbres. Shielding against impulse noise on the FM band was less than optimal, as passing motorcycles and traffic-signal switching demonstrated throughout our test drives. AM reception was also noise prone as well as slightly muffled except near a strong trans-

FM mono usable sensitivity (75-ohm input): 18 dBf (2.18 μ V)
Mono 50-dB quieting sensitivity (75-ohm input): 18.3 dBf (2.26 μ V)
Stereo 50-dB quieting sensitivity (75-ohm input): 26 dBf (5.5 μ V)
Tuner signal-to-noise ratio at 65 dBf: 72 dB
Tuner distortion at 65 dBf: 0.84%
FM frequency response (-3-dB limits): 20 to 16,000 Hz
Stereo separation at 100, 1,000, and 10,000 Hz (at 65 dBf): 38, 45, and 30 dB
Capture ratio at 65 dBf: 3.9 dB
AM rejection at 65 dBf: 72 dB
Alternate-channel selectivity: 51 dB
Adjacent-channel selectivity: 2 dB
Image rejection: 84 dB
AM frequency response: 37 to 2,300 Hz \pm 6 dB

Tape-playback frequency response (standard BASF test tapes, -3-dB limits): 120- μ s EQ, 32 to 15,000 Hz forward or reverse; 70- μ s EQ, 32 to 17,000 Hz forward, 32 to 18,000 Hz reverse
Tape signal-to-noise ratio (referred to 250 nWb/m at 315 Hz, 120- μ s EQ): unweighted, 50 dB; Dolby E and CCIR/ARM weighting, 56 dB; Dolby B and A-weighting, 64 dB
Flutter: forward, \pm 0.22% CCIR-weighted peak, 0.13% JIS-weighted rms; reverse, \pm 0.18% CCIR-weighted peak, 0.1% JIS-weighted rms
Tape speed accuracy: -0.6%
Fast rewind time for C-60: 127 seconds
Tone-control range: +10, -11 dB at 100 Hz; +9.6, -13 dB at 10,000 Hz
1,000-Hz clipping-power output into 4 ohms: 12.25 watts

mitter. The preset buttons are quite close together, leading to a mis-selection now and then, but otherwise the radio was simple and comfortable to use.

Tape play in both directions was smooth and for all practical purposes indistinguishable. The pitch steadiness was fairly good, with only a slight lack of firmness in certain piano or organ tapes; the sound was stable with all other kinds of music. The Dolby system worked well with all three tape types (normal, chrome, and metal) that the deck handles.

The tape transport was reasonably insensitive to vibration from stone-block streets and old tram rails. There was just one surface it did not handle with aplomb—a washboard country road in Connecticut disrupted a Joni Mitchell tape badly enough to make me shut it off. Of course, my Volvo creaked and protested the road surface too, as did my passenger, so we returned to more gentle roads.

To test the player's handling of flimsy tape, I slipped an old C-120 into it one frosty morning and successfully played through both sides using autoreverse. (Of course, we don't advise readers either to play tapes longer than a C-90 or to pop their favorite cassettes into a cold transport, but we regularly try this "torture test" just to see if the player and tape emerge unscathed.) Like most car tape players with autoreverse, the 12-1909 keeps playing a cassette until you tell it to stop. Although shutting off the ignition disengages the pinch-roller and backs the head out a bit, the tape

remains in the bay until you eject it manually. When there is power and a tape is in, the player is on. The radio, on the other hand, comes on only when you push the volume knob—a welcome feature if, like me, you don't want an onslaught of radio noise whenever you change cassettes!

The integral amplifier appears to be a good one. Crisp transients from harpsichord and Fender bass alike failed to strain the 4-inch Philips speakers in my car. At home, connecting the Realistic 12-1909 to a pair of B&W bookshelf speakers confirmed my impressions on the road. There was a fine, open quality to the sound that I don't normally expect to encounter from receiver/tape players in this price class. Reaching very good listening levels was not a problem, and the amplification did not fall to pieces when pushed near its limits. The receiver let me know it was sweating at high volumes, but its sound remained musical.

For its price, and considering the ease of installation (helped by a good manual), the Realistic 12-1909 is a bargain. It lacks only the kind of refinement that many more hundreds of dollars will sometimes buy. Aside from a brief squeal as the autoreverse engages, the mechanism works simply and silently. In fact, my only substantial criticism is that the loudness control and the bass and treble tone controls coincide in their effects, making subtle adjustments hard to achieve. But if your budget is modest, the 12-1909 has a lot to offer.

C.G.
Circle 145 on reader service card

by Julian Hirsch



Reading the Mail

READER mail is a valuable source of feedback, letting me know what your problems are and whether I am answering your unspoken questions—or perhaps shedding more confusion than light on some of the murkier aspects of hi-fi. Although I read every letter, I am unable to answer most of them. (Remember, I cannot give specific product or installation advice or answer *any* letter that isn't accompanied by a stamped, self-addressed envelope.)

Some correspondents, fortunately, bring up points that merit a reply, either because something I have written is unclear or because the writer's experience augments or contradicts my own. For example, one reader (among many, I'm sure) wonders about the concept of amplifier "headroom." His problem arose because a dealer advised him against buying a certain receiver because, he said, it had only a 0.5-dB headroom (he did not say what type of headroom rating this was). The dealer claimed that at least a 3-dB headroom is necessary to do justice to digital recordings (which is not

necessarily true). Having found few units advertised as having a 3-dB headroom, my correspondent was understandably confused.

In the first place, there are two types of headroom defined by the EIA's amplifier test standard, and they pertain to rather different qualities of an amplifier. *Clipping headroom* is a measure of the manufacturer's conservatism in rating the amplifier; it compares the *rated* continuous power with the *actual* continuous power. If an amp is rated at 200 watts and actually delivers precisely 200 watts at the clipping point, it has a 0-dB clipping headroom. On the other hand, if the manufacturer gives the *same* amplifier a 100-watt rating, it can then be said to have a 3-dB clipping headroom (the actual 200 watts is 3 dB higher than the rated 100 watts). Obviously, if a manufacturer wishes to remain competitive, he will not rate his products *too* conservatively, despite the "advantage" of higher clipping-headroom readings.

Dynamic headroom, on the other hand, tells us something about the amplifier's ability to deliver current to the loudspeakers and, secondarily, about the regulation of the amplifier's power supply. If an amplifier is called on to deliver high peak power levels for short periods, it is quite possible, and desirable, for it to exceed its rated continuous (clipping) power output. If the amp's power supply is "loosely" regulated, there will be a relatively high voltage (more than is required for the amplifier to deliver its rated power) available under most normal listening conditions, when the average power output is likely to be a few watts or less. Even with loose regulation, this voltage does not change very much during transient high-current demands, and therefore the

amplifier can deliver more than its rated output power during musical transients. Usually this short-term peak (dynamic) output is on the order of 1 or 2 dB greater than the rated output power, but in some amplifiers it can reach 3 or even 4 dB. The difference is the dynamic headroom.

It would be misleading to attribute too much significance to this quality. After all, if the amplifier clips audibly, you need merely turn the volume down slightly. Nevertheless, most of us would prefer to be able to play music a bit louder than usual on occasion without fear of clipping or possible damage to our speakers. The matter can be summed up in this way: of two amplifiers having the same clipping-power output, the one with the greater dynamic headroom will be able to sustain a louder average level without distortion. On the other hand, if two amplifiers have the same dynamic headroom, the one with the higher clipping-power rating would be the "more powerful" amplifier—and probably larger, heavier, and more expensive as well. Unfortunately, dynamic-headroom specs are not always given in manufacturers' literature, so you may have to depend on test-report results for that specification.

On a somewhat related matter, another reader expressed serious doubts about the ability of an amplifier with a "smart," signal-controlled power supply (such as some of those from Carver, Soundcraftsmen, Hitachi, Yamaha, and others) to respond fast enough to avoid clipping the leading edge of a transient signal. Without corroborating evidence, he states that such clipping distortion is unavoidable and audibly serious, and he even suggests a method of testing for it.

As it happens, the standard EIA dynamic-headroom measurement is done in much the same way as the test this reader proposes, with 20-millisecond bursts of a 1,000-Hz sine-wave signal. I have tested quite a number of "smart" amplifiers in just this way, and I have never found any sign of such a problem. The reason, of course, is that the power-supply response time has been made shorter than that of the amplifier, so that it is never "caught

Tested This Month

Sony CDP-520ES
Compact Disc Player
Rich Acoustic 7B
Speaker System
Yamaha CD-X2
Compact Disc Player
ADS C3 Cassette Deck

ULTI-MATES.



If you haven't discovered the ultimate truth about audio cassettes, you're about to. No one makes finer normal or high-bias audio cassettes than TDK.

But don't just take our word for it. Take the sound of our AD-X and SA-X Pro Reference Series audio cassettes as proof. Each is designed to deliver unmatched performance for every type of music.

When you record in the normal-bias position with the Avilyn-based AD-X, you'll discover the higher MOL, broader frequency sensitivity, and greater headroom. All this enables AD-X to handle your most demanding program sources—without distortion.

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You can also obtain the ultimate listening pleasure from two

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Also available in
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longer-length box.

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Warning: The Surgeon General Has Determined
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LING

short." Like so many other audio "problems" we hear about, this one does not exist in the real world.

Another overrated "problem"—although certainly a highly controversial one at the moment—concerns the effects of using a single digital-to-analog converter (DAC or D/A) to generate the two output signals of some CD players. In such products, the converter output is switched (multiplexed) between the left- and right-channel signals, with the result that the analog signals do not emerge exactly in phase with each other (assuming that both channels were in phase on the re-

If an amplifier is called on to deliver high peak power levels for short periods, it is quite possible, and desirable, for it to exceed its rated continuous (clipping) power output.

cording). In contrast, a player that has separate DAC's for each channel can deliver outputs that are almost exactly in phase at all audible frequencies. The reader who wrote me about this asked why I do not comment on this property of the CD players we test and on its audible significance, if any. Note that the phase shift we are discussing is between the two channels, or *inter-channel*, and can be thought of as a constant time delay on one channel. It is *not* the same as the *intra-channel* phase shifts caused by CD-player output filters (see the article on page 50).

As a matter of fact, I do comment on it. Whenever we test a CD player, the phase shift between channels at 20,000 Hz is mentioned in our report. If the phase shift is small, on the order of 5 to 10 degrees, it is a fair assumption that the player has separate D/A converters (or one DAC and a corrective time delay on one channel, which amounts to the same thing). A single multiplexed and uncorrected converter will produce a phase shift of about 90 degrees at 20,000 Hz. Almost all CD players we have tested fall into one of these two categories.

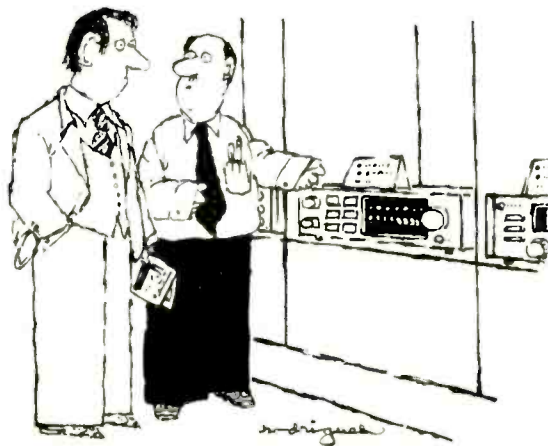
Such a "horrendous" phase shift as 90 degrees, occurring at a frequency well above the normal range of human hearing, corresponds to a time difference between the channels of some 11.3 microseconds. If you are listening in mono, or to a stereo broadcast in which the two channels are encoded as sum ($L + R$) and difference ($L - R$) signals, a 90-degree phase shift can have a very slight effect on frequency response. But to put it into an acoustic perspective, the effect is equivalent to a difference of about $\frac{1}{8}$ inch in the distance from each of the speakers to the listener's ears.

If you think you hear any effects from a CD player's phase shift in normal stereo listening, try moving one ear about $\frac{1}{8}$ inch closer to one speaker. If the sound gets worse, approach the other speaker with the other ear (be sure to move $\frac{1}{4}$ inch, to compensate for the first movement!). I have yet to hear any audibly detectable difference between CD players having far greater measurable differences than this, and I would suggest that there are more important problems to worry about in the never-ending search for perfect sound reproduction.

And, finally, I will try once again to explain why I sometimes use language that seems to some readers to avoid coming to grips with the issues as they see them. Actually, I generally take great care to say just what I want to say, no more and no less. Perhaps I am not always suc-

cessful, but that is my goal. One gentleman takes me to task for our February report on the Pioneer CLD-900 combination video-disc/Compact Disc player. He was disturbed because I said that "a LaserDisc... even in its CX-encoded analog form, *can* have... quality superior to... *conventional* home video-cassette recorders" (emphasis added). For reasons that are not clear to me, he seemed to take exception to the two words italicized in the quotation. I said "*can*" because I have not, obviously, personally evaluated every LaserDisc player and VCR, which would certainly be required before I could say "*does*" instead of "*can*." I said "*conventional*" to exclude hi-fi VCR's, which *can* (that word again!) have better audio quality than a CX-encoded LaserDisc.

My correspondent, however, dismisses my carefully worded statement as a "mouthful of nothing," concluding that my words were carefully chosen only to avoid offending an advertiser rather than in the interests of accuracy. I suspect he is one of those people who prefer criticism to be sweeping and absolute even when its basis is sketchy or even nonexistent. My criticism of some of the human-engineering aspects of this product was apparently not vitriolic enough to satisfy him. Sorry about that! If you must have capricious product criticism, be warned that I'm making every effort to disappoint you. □



"You say there are five in your family? Well, this receiver is 45 watts per channel, or 9 watts per person, and that comes to only 4.5 watts per ear. For really good sound, sir, you should have at least 10 watts an ear."

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PHOTOS: RED AXON

SONY CDP-520ES COMPACT DISC PLAYER

Julian Hirsch, Hirsch-Houck Laboratories

SINCE Sony introduced the CDP-101 Compact Disc player in 1983, at least two new "generations" of CD players have made their appearance. Each has been markedly superior to its predecessors in the important characteristics of error correction and ability to withstand physical shock and vibration without losing its tracking of the disc. There is disagreement about the sonic improvements that are said by some manufacturers to distinguish their new players from earlier designs or from competitive products using different design approaches. In testing perhaps a couple of dozen CD players, I have never found what I would consider to be a *significant* difference in sound quality among any of them—that is, I have never found a difference that clearly proves one player's sound is superior to another's.

There is no doubt, however, that in only a couple of years enormous strides have been made in improving the tracking reliability of CD players and in reducing their size, weight, and cost. Progress in these areas is due in part to the development of large-scale integrated cir-

cuits (LSI's), each of which replaces a large number of smaller IC's, transistors, and passive components. Paralleling this development have been improvements in the mechanical system that guides the laser beam along the spiral of submicroscopic pits on the disc.

The new Sony CDP-520ES is an excellent example of the state of the art in CD players, even though there is little in its external appearance to distinguish it from other, more mundane CD players. In keeping with current trends, the front panel of this low-profile player presents a rather subdued appearance, with a reasonably small number of flush-mounted pushbuttons and a modest fluorescent display that shows the usual information on track and index numbers, elapsed time of the current track, and remaining playing time on the disc. The horizontal disc drawer opens and closes with surprising rapidity on alternate touches of a button. It will also close if lightly pushed.

The CDP-520ES comes with an infrared remote control that not only duplicates most of the front-panel control functions but has the additional capability of accessing

any track by direct entry of its number (doing this from the player's front panel can require several operations). Other features are listed in the box on page 28.

It's what's inside the rather plain exterior of the CDP-520ES that accounts for its outstanding performance, however. The new circuitry, principally on third-generation LSI chips, includes a high-speed digital-to-analog (D/A) converter and a digital filter (a first for a Sony player). The Sony designers have used 88.2-kHz oversampling and high-order digital filtering to obtain an optimal combination of pass-band flatness, reduced beat-frequency intermodulation, and low noise. The new LSI's are CMOS devices, which have very low power consumption and generate almost no heat. While these are not particularly important considerations in a home component, some of these same chips made possible Sony's tiny portable CD player, the D-5 (reviewed here last December).

The most striking quality of the CDP-520ES can be appreciated without even listening to it. Its new linear-motor tracking mechanism provides an extremely high-speed search capability—many times faster than that of any other CD player we have seen—together with more precise servo control of the laser beam. Instead of the conventional rotary motor that drives the optical system through gears, the Sony mechanism is driven directly by a

linear motor that's somewhat analogous to a loudspeaker's voice coil (with an operating excursion of about 1½ inches). Velocity feedback in the tracking servo allows the optical system to move across 50,000 "grooves" per second in its high-speed mode, slowing down automatically as it nears the selected track and stopping precisely above it. This fast-slewing process is aided by Sony's new low-mass laser-pick-up system, which is a third the size and weight of previous systems.

The Sony CDP-520ES, finished in black, is 17 inches wide, 13¼ inches deep, and 3¼ inches high. It weighs approximately 14¾ pounds. The RM-D302 remote-control unit, powered by two AA batteries, measures 2¾ x 7 x ¾ inches. Price: \$600. Sony Corp. of America, Dept. SR, Sony Dr., Park Ridge, NJ 07656.

Lab Tests

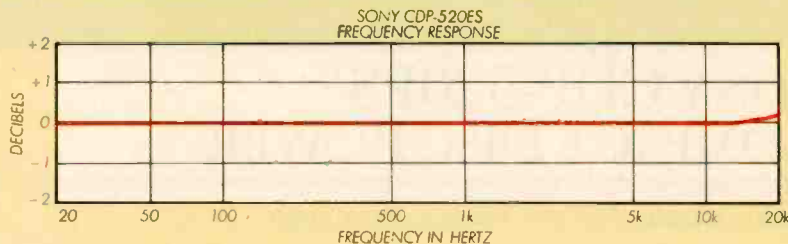
The Sony CDP-520ES lived up to the manufacturer's claims in full measure. The frequency response, measured with the sweep on the Philips TS3 test disc, was the flattest we have yet measured from a CD player. The two channels were identical (with just under 0.1 dB imbalance), having a truly unmeasurable output variation of perhaps 0.01 dB from 20 to 10,000 Hz, increasing to +0.2 dB at 20,000 Hz. The inter-channel phase shift of 43 degrees at 20,000 Hz is intermediate between the values we usually measure from CD players using separate D/A converters for the two channels and from those in which a single converter is multiplexed between the channels. This result suggests that Sony is multiplexing a single D/A converter but at double the usual frequency, thus halving the inter-channel delay and the corresponding phase shift.

The electrical performance of the CDP-520ES was typical of the best of today's CD players, with channel separation in the 105- to 114-dB range at most audible frequencies, a noise level of -100 dB, and 1,000-Hz distortion readings of 0.0003 to 0.0004 percent. Flutter, of course, was unmeasurable (the reading was the 0.001-percent residual of our test equipment).

Like a couple of other top CD players we have tested recently, the

FEATURES

- Oversampling digital filters with high-speed digital-to-analog converter
- Horizontal-opening disc drawer
- Linear laser-tracking servo system for rapid cueing
- Lightweight laser optical system
- Headphone jack with volume control
- Random Music Sensor (RMS) facility can be programmed to play up to sixteen tracks in any order
- Cueing by track or index number
- Fast search with audible program
- Automatic Music Sensor steps ahead or back to the start of any track (up to ninety-nine total)
- Disc, track, and phrase repeat functions
- Infrared remote control duplicates all operating functions except RMS and provides direct numerical access to any track
- Display window shows disc loaded, track and index number, elapsed playing time of track, remaining time on disc, status of repeat function
- Rear apron has remote input and output connectors, for use with a Sony cassette deck and system controller, and a subcode connector for use with future accessories when CD's become available with video content
- One unswitched a.c. outlet



HIRSCH-HOUCK LAB MEASUREMENTS

Maximum output level: 1.91 volts

Total harmonic distortion at 1,000 Hz: 0.00032% referred to 0 dB; 0.0004% referred to -10 dB

Signal-to-noise ratio: 100 dB A-weighted

Channel separation: 114 dB at 100 Hz; 105.5 dB at 1,000 Hz; 88.5 dB at 10,000 Hz

Frequency response: +0.2, -0 dB from 20 to 20,000 Hz

Cueing time: 1.8 seconds

Impact resistance: Top, A: side, A

Cueing accuracy: A

Defect tracking (size of the largest defect successfully tracked): signal-surface damage, 900 micrometers; painted dots, 800 micrometers; simulated fingerprint, pass

CDP-520ES tracked all the calibrated disc defects on the Philips TS4A test disc and made the transition from Track 17 to Track 18 of that disc without clipping the opening syllable on the second track. Since there is no silent interval between those tracks, going from one to the other is a severe test of the cueing and demuting accuracy of a CD player; not many pass it unscathed. We also appreciated Sony's volume control for the headphone jack, since the player could drive 600-ohm phones to an uncomfortably high level.

Our standard cueing-time test, from Track 1 to Track 15 of the

Philips TS4 disc, confirmed the high speed of Sony's linear servo. As nearly as we could measure it, the transition took only about 1.8 seconds, although part of that was probably startup time in the player after the button was pressed and another part our own reaction time in operating the stop watch. The slewing speed of the CDP-520ES was demonstrated much more dramatically when we programmed it to play the first and the last tracks on the Philips test disc (No. 1 and No. 25). In this case the transition was so fast we couldn't really measure it—certainly it was no more than a fraction of a second. To

appreciate the advance this high cueing speed represents, you need to have the experience of waiting for other players—even Sony's earlier models—to perform the same operation. It usually takes them from 5 to 8 seconds, and often more.

Although it probably has nothing to do with the tracking-servo speed, the CDP-520ES conveys its message of rapid response to a user from the very beginning. When the OPEN button is touched, the disc drawer quietly opens in about 1 second; it closes for play just as rapidly and smoothly.

Comments

Even if the Sony CDP-520ES did not sound any different (to us) from any other CD player, it certainly sounded fine, measured superbly, and definitely outperformed most others we have tested in the equally important respects of flawless tracking, startlingly smooth and rapid operation, and outstanding ability to resist physical shock. Although you cannot hit it with a hammer while it is playing without causing it to skip a beat, you can subject the top and sides of this player to vigorous slapping and rapping with no effect on the sound. More to the point, unlike many others, it does not require kid-gloves treatment in installation or operation.

We used all the front-panel controls and features of the CDP-520ES, and they worked just as claimed. Despite its deceptive simplicity, this CD player is at least as versatile as any other we have used, and its combination of front-panel and remote-control features makes it more versatile than most. Disheartening as it may be for those people who thrive on negative criticism, we could find nothing about the CDP-520ES that we would wish to see done differently—and certainly not *better!* No doubt it is in some way unknown to us still not perfect (after all, what is?), and it is quite likely that Sony is even now working to make its fourth-generation players still better and/or less expensive. Until then, however, the CDP-520ES is unquestionably a top contender in a crowded field, besides being a very good value for the money.

Circle 140 on reader service card



RICH ACOUSTIC 7B SPEAKER SYSTEM

Julian Hirsch, Hirsch-Houck Laboratories

RICH ACOUSTIC LABS' Model 7B is a three-way floor-standing speaker system. Its 8-inch polypropylene woofer operates in a vented enclosure (with Thiele B-4 alignment) and crosses over at 790 Hz to a 2-inch soft-dome midrange driver in a separate compression chamber. The second crossover, at 4,500 Hz, is to a 1-inch soft-dome magnetic-fluid-cooled tweeter, which is surrounded on the front panel by a foam-plastic ring to improve dispersion and smooth the frequency response. All three drivers and the woofer port are vertically aligned. The crossover networks have 12-dB-per-octave slopes, use computer-grade components, and are phase-corrected.

The 7B system is housed in a handsome cabinet veneered in ei-

ther white oak or American walnut. The cabinet's edges and corners have rounded solid-wood moldings, and the whole exterior has a hand-rubbed finish. The dark-brown cloth grille is retained by plastic fasteners. Binding posts on $\frac{3}{4}$ -inch centers are recessed into the rear of the cabinet. The speaker has no external level or balance adjustments.

The Rich Acoustic 7B is 26 inches high, 11 inches wide, and 13 inches deep; it weighs about 40 pounds. Although the speakers can be placed directly on the floor, there are optional matching wood pedestals that raise them about 6 inches and tilt them slightly backward. Prices: speakers, \$399 each; pedestals, \$49.95 per pair. Rich Acoustic Labs, Inc., Dept. SR, 2401 Ross Clark Circle, Dothan, AL 36301.

Lab Tests

For our room-response measurements and listening tests, we placed the 7B's on their pedestals and about 18 inches out from the wall behind them. The averaged response from the two speakers (driven one at a time) was measured at a single microphone position about 12 feet in front of the left speaker. The woofer response was measured separately at the cone and the port, using close microphone spacing to eliminate room effects, and the combined bass-response curve was spliced to the room measurement to form a composite frequency-response curve.

The combined bass response (woofer plus port) was impressively wide and flat, with a 5-dB overall variation from 20 to 1,000 Hz. The middle- and high-frequency portions of the room-response curve were equally impressive, uniform within 3 dB overall from 1,000 to 20,000 Hz, except for a minor jog at about 1,000 Hz (which could be a measurement artifact). The composite frequency response was flat within ± 2.5 dB from 20 to 20,000 Hz, which is one of the best responses we have yet measured from a loudspeaker.

The axial FFT response, measured at 1 meter with our IQS system, was less constant, largely because of a dip at 2,000 Hz that might have come from a crossover-cancellation effect (it did not appear in the room response). Nevertheless, the ± 4.5 -dB variation from 180 to 18,000 Hz was consistent with the uniformity of the room-response data.

The speaker system's impedance was 6.5 ohms in the vicinity of 150 Hz, with maxima of 35 ohms at 58 Hz and 30 ohms at our lower measurement limit of 20 Hz. The impedance was a constant 8 to 9 ohms through the midrange and reached its minimum of just under 4 ohms at 7,000 Hz. An input signal of 2.83 volts of random noise at 1,000 Hz produced a sound-pressure level of 90 dB at a 1-meter distance, exactly as rated and fairly typical for ported systems of this size.

At a drive level of 2.83 volts, the woofer distortion was less than 1 percent between 60 and 100 Hz, ris-

ing smoothly to 3.4 percent at 50 Hz and 8.8 percent at 35 Hz. We measured the distortion at the port for frequencies below about 60 Hz, where the acoustic crossover between port and cone takes place.

We checked the power-handling ability of the 7B with single-cycle tone bursts at frequencies of 100, 1,000, and 10,000 Hz (each falling within the operating range of one of the three drivers). The drive level was increased until the acoustic waveform picked up by a microphone showed visible distortion or limiting, or until the amplifier output became distorted. At 100 Hz the woofer cone "bottomed," producing a raspy sound, with about 250 watts input (based on the impedance of 8.5 ohms at that frequency). At 10,000 Hz the waveform distorted at about 335 watts (4 ohms).

It was difficult to determine the actual 1,000-Hz limits of the speaker, since the amplifier output became visibly nonsinusoidal at levels far below the actual clipping point, apparently because of an interaction between the speaker reactance and the amplifier at the frequency. The apparent power limit was 18 watts, but the actual limit is probably far greater since there was no audible hint of speaker distress even at much higher levels.

Comments

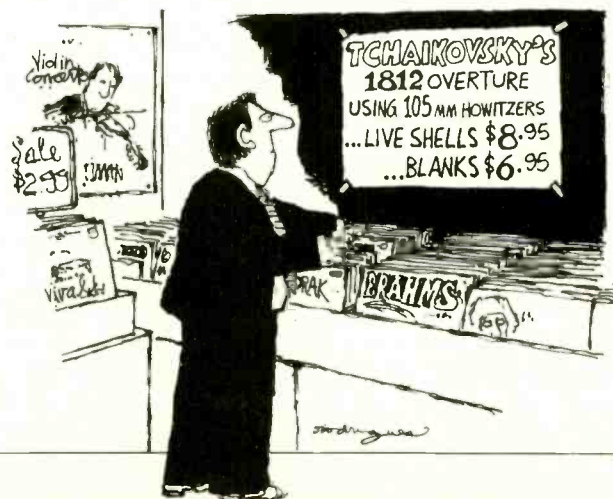
Little variety is possible in the external styling of a conventional box speaker, but the Rich Acoustic 7B manages to present an unusually handsome appearance by virtue of its attractively finished wood grain and rounded corners. Somewhat more latitude is available in the

choice of drivers, port design, and crossover characteristics. Here too, Rich has set the 7B apart from most competitive speakers.

Listening to the 7B's, our initial impression was one of smooth, wide, and generally uncolored sound with a *slightly* bright high end. Fortunately, the brightness was not in the middle or lower treble range, where it could have imparted stridency to the sound, but rather in the uppermost audible octave. Apparently the effect results from the system's slightly elevated output in the 10,000- to 20,000-Hz range. Since much musical material lacks significant energy at those frequencies, this emphasis is not always evident. When it is, the sound is not unlike that provided by some moving-coil cartridges with similar rising high-end responses. The effect might best be described as an enhanced clarity or crispness, and we never found it at all unpleasant.

While it might not be wise to use these speakers with a cartridge that has a rising high-end response (the combination could make the highest frequencies *too* bright), programs coming from a flat, wide-range cartridge, tape deck, CD player, or FM radio sound just fine through the 7B's. Their relative lack of midrange or bass coloration and their unusually extended bass response set them apart from many other box-shaped speakers in the same general price range. As always, it is advisable to audition the speakers, preferably in your own home, before buying them. But you are not likely to go wrong by choosing the Rich Acoustic 7B's.

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YAMAHA CD-X2 COMPACT DISC PLAYER

Julian Hirsch, Hirsch-Houck Laboratories

THE Yamaha CD-X2 is one of the least-expensive CD players on the market. Its \$399 list price has been achieved in part by omitting some of the special control and programming features found in higher-priced units, but, as we found, without sacrificing the basic audio qualities of a digital-disc player.

The disc loads from the front of the player into a motorized disc drawer, which slides out noiselessly at the touch of a button and returns as smoothly at a second touch (or if the drawer itself is given a slight nudge). Normally, pressing the PLAY button starts the machine playing Track 1 of the loaded disc. Until the program actually begins, the word "play" appears in the display window, then it is automatically replaced by the track number. Touching the DISPLAY button to the right of the window changes the readout to show the elapsed time of the track being played, and touching it again returns the readout to the track number.

Next to the PLAY button is one marked PAUSE/STOP. Touching this button once temporarily halts play, which resumes if the PLAY button is pressed again. Pressing PAUSE/STOP twice ends playback of the disc, returning the laser pickup to its start

position. Pressing the DISPLAY button once in the pause mode causes the readout to show the elapsed time of the track. In this mode only, pressing it twice shows the total playing time of the disc. A third touch restores the track number.

To the right of the PAUSE/STOP button are four large search-control buttons. Two are marked "+" and "-", respectively, and are used during play to move the pickup forward or back to the beginning of the next or the current track. Holding one of these buttons in causes the pickup to continue skipping forward or back at the rate of about two tracks a second.

The other two search buttons, marked with double arrows and labeled INDEX, serve a dual function. During normal play, holding in one of these buttons causes the pickup to scan the disc, either forward or backward, at above-normal speed. The contents remain audible at the increased tempo but without change in pitch. The scanning is relatively slow for the first 3 seconds a button is held in, and then it speeds up. In the pause mode (after PAUSE/STOP has been pressed once), these same buttons can be used to access specific index points within a track, if the disc is provided with them. The selected index numbers appear in

the display window to the right of the track number.

The CD-X2 can be programmed, with its PROG button, to play up to nine tracks in any order. In the programmed-playback mode, the display normally shows the actual track number being played as well as its position in the programmed sequence, P1 through P9. Pressing DISPLAY in this mode switches the readout to show the elapsed time of the selected track or the total time of the whole programmed sequence. The player automatically pauses for 3 seconds between programmed selections even if there is no such pause between the tracks on the disc. Finally, there is a REPEAT button that can be used to repeat playback of the entire disc or of a programmed sequence.

The Yamaha CD-X2 has a front-panel headphone jack with its own volume control. Fixed-level line outputs are on the rear of the machine. Finished in black, the unit measures only 13 $\frac{3}{8}$ inches wide, 11 $\frac{1}{2}$ inches deep, and 3 $\frac{3}{8}$ inches wide. It weighs a mere 7 $\frac{3}{4}$ pounds. Yamaha Electronics Corp. USA, Dept. SR, 6660 Orangethorpe Ave., Buena Park, CA 90620.

Lab Tests

Our lab measurements of the Yamaha CD-X2 confirmed the manufacturer's specifications and showed performance in line with that of other third-generation CD players. The frequency response was very flat up to almost 10,000 Hz, rising to +0.5 dB at 15,000 Hz and falling to about -1 dB at 20,000 Hz. Low-

end response fell to -0.25 dB at 20 Hz. Both channels were absolutely identical in their frequency response and output level.

The player's noise level and harmonic distortion were typical of today's CD players, and flutter was, as usual, unmeasurable. The phase shift between channels at 20,000 Hz was 58 degrees, and the ringing pattern on a 1,000-Hz square wave indicated the use of digital filtering. According to Yamaha, the CD-X2 has a "double resolution digital filter," which is apparently a digital filter plus a third-order active analog filter.

Like almost all current CD players, the CD-X2 had no difficulty in tracking the largest defects on the calibrated Philips TS3 test record. Its servo moved the laser pickup from Track 1 to Track 15 of the TS4 record in about 4.5 seconds, performance that is also typical of recent players we have tested. The difficult transition between Tracks 17 and 18 of that record, which have no silent interval between them, was handled perfectly, with no audible clipping of the opening sound of the second track. However, when we used the programming function to play those two tracks, there was a short burst of the opening sound of Track 18 at the end of Track 17, just before the 3-second silent interval the player inserts in its programmed mode. The CD-X2 was fairly good in its ability to withstand physical shock applied to the sides of its cabinet, but it was considerably more sensitive to taps on its top cover. Headphone volume was excellent with 300-ohm phones.

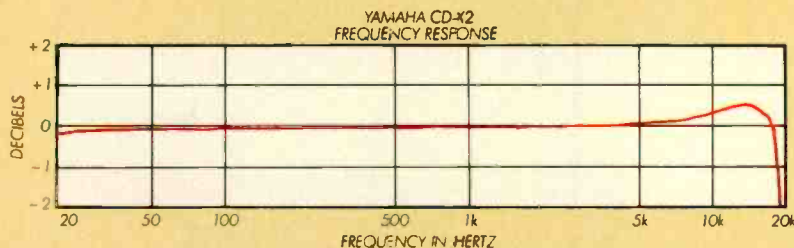
Comments

The Yamaha CD-X2 delivered the same high quality of sound we have experienced with every CD player we have used. It was utterly silent and smooth in every phase of its operation. It does not have all the control niceties many other CD players have, some of which we have by now come to expect, but it is one of the lowest-priced CD players designed for use in home music systems.

For our part, a remote control is not nearly as important for a CD player as for TV or a VCR, so we did not miss one with the CD-X2.

FEATURES

- Three-beam laser pickup
 - Digital filter and third-order active filter
 - Disc loading in motor-driven horizontal drawer
 - Headphone output with volume control
 - Track-skip in either direction
 - Index search
 - Forward or reverse scan in play mode with audible program; automatically switches to higher scanning speed after 3 seconds
 - Front-panel LED display
- switches between operating status, track number with program or index selection, and time (elapsed time in the current selection, total time on the disc, or total time of a programmed sequence)
 - Programmable playback of up to nine tracks in any order
 - Interval of at least 3 seconds inserted between selections in programmed playback
 - Repeat of entire disc or all programmed selections



HIRSCH-HOUCK LAB MEASUREMENTS

Maximum output level: 1.7 volts
Maximum headphone output
 (600-ohm load): 2.75 volts
Total harmonic distortion at
 1,000 Hz: 0.0014% referred to
 0 dB; 0.0087% referred to
 -12 dB
Signal-to-noise ratio: 97 dB
 A-weighted
Channel separation: 90 dB at
 1,000 Hz; 80 dB at 20,000 Hz

Frequency response: $+0.5$, -1 dB
 from 20 to 20,000 Hz (see graph)
Cueing time: 4.5 seconds
Impact resistance: sides, B; top, C
Cueing accuracy: A
Defect tracking (figures are size
 of largest defect successfully
 tracked): signal-surface damage,
 900 micrometers; painted dots,
 800 micrometers; simulated
 fingerprint, pass

Moreover, the more exotic programming and cueing capabilities of a few much more expensive players are not needed for most listening situations. Although we found the selection of high-numbered tracks (some test records have up to ninety-nine tracks) a tiresome process with the CD-X2, this is fortunately more a problem for the tester than for the listener, since few music CD's (even samplers) have more than fifteen or twenty tracks.

Another economy is in the display, which can show only one type of information at a time. The display itself is simplified, true, but we have always found it very convenient to be able to check simultaneously which track is being played and how far into it we are without having to use a control to switch between one readout or the other.

On the other hand, Yamaha has made the most important information, the current track number, available without manual selection by the casual user. Our final criticism concerns the programming function. Once the CD-X2 has been programmed to play a desired sequence of tracks, there is no way to cancel the program except by turning the player off and on again or by opening and closing the disc drawer. Simple enough—but inconvenient if you change programs frequently.

If you have no need for advanced programming or other operating features, however, the Yamaha CD-X2 is certainly an excellent value. And as far as its intrinsic disc-playing performance and sound quality are concerned, it is as good as any CD player we have used.

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MERIT



ADS C3 CASSETTE DECK

*Craig Stark,
Hirsch-Houck Laboratories*

DESIGNED to match the other components in the ADS Atelier series, the ADS C3 cassette deck has a distinctly European flavor in both its styling and some of its features. The low-profile deck offers two speeds— $3\frac{3}{4}$ ips as well as the usual $1\frac{7}{8}$ ips—along with separate record and playback heads, both Dolby B and Dolby C noise reduction, and equalized record-level indicators. Unlike most tape decks, but like many CD players, the C3 loads cassettes horizontally (with the tape openings toward the user) in a motorized drawer that slides gently out from the front panel at the touch of a button. The cassette drawer also contains the four pushbuttons used to set the bias and equalization for the type of tape being used, including ferrichrome (Type III), which is more popu-

lar in Europe than in the U.S. and is rarely accommodated on decks sold here.

Also hidden within the cassette drawer after it retracts are the selector switches for the tape speed, the noise-reduction system, and several other infrequently used functions. The C3's drawer design both eliminates front-panel clutter and provides easy access to the tape heads for cleaning and demagnetizing, though at the cost of making cassette insertion and removal slightly slower and less convenient than with a conventional deck.

The front of the cassette drawer contains the pushbuttons for the solenoid-controlled transport and those related to the four-digit electronic tape counter. The ADS C3 uses a single capstan that is driven directly by a quartz-referenced PLL-controlled servomotor. A second d.c. motor handles the tape-spooling functions. The record and playback heads are separate, permitting instant comparison between the in-

coming signal and its recorded result. They are made of a laminated Sendust alloy for long life.

In keeping with European preference, the C3's peak-reading, LED record-level indicators reflect the level of the input signal after it has undergone the usual high- and low-frequency boosts of recording equalization. While it is mildly disconcerting in a measurement lab to see a deck's indicators change their readings with changes in the test frequency, such equalized indicators more accurately reflect the actual signal being fed to the tape and are undoubtedly more useful for the nontechnical operator. The ADS C3's record-level indicators are only $1\frac{1}{4}$ inches in total length, but they have twelve segments per channel and they are calibrated from -15 to $+6$ dB.

While the trend in most hi-fi cassette decks today is to eliminate microphone inputs altogether, the C3 not only provides them but permits the user to mix microphone and line-level sources together. On the other hand, there is no playback-level control. While this function can ordinarily be handled by the system amplifier, the user has no control over the playback level through the C3's headphone out-

FEATURES

- Two-speed ($1\frac{7}{8}$ - and $3\frac{3}{4}$ -ips) operation
- Separate record and playback heads with source/tape monitor switch
- Top-loading design with slide-in drawer
- Direct-drive capstan with quartz-referenced, phase-locked servo control
- Dolby B and Dolby C noise reduction
- Solenoid-controlled transport
- Microphone and line-input mixing
- Equalized peak-reading level indicators
- Four tape-type bias/equalization selector switches
- Music finder and memory rewind/replay/repeat
- External-timer-activated record or play modes
- Switchable FM multiplex filter



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HIRSCH-HOUCK LAB MEASUREMENTS

Fast-forward time (C-60): 91 seconds

Rewind time (C-60): 92 seconds

Speed error: none measurable

Dolby B tracking error: +0, -1 dB

Dolby C tracking error: +0, -2 dB

Wow-and-flutter: 1 $\frac{7}{8}$ -ips playback, 0.032% wrms, 0.055% DIN

peak-weighted: 1 $\frac{7}{8}$ -ips

record-playback, 0.054% wrms,

0.078% DIN peak-weighted;

3 $\frac{3}{4}$ -ips record-playback, 0.046%

wrms, 0.062% DIN peak-weighted

Line input for indicated 0-dB:

96 mV

Line output at indicated 0-dB:

0.55 volt

Microphone input for 0-dB:

0.59 mV

Microphone input at overload:

55 mV

Meter indication at IEC-standard

0-dB: -2 dB

Tape used: TDK AD (Type I, ferric)

IEC 0-dB distortion: 1 $\frac{7}{8}$ ips,

0.85%; 3 $\frac{3}{4}$ ips, 0.44%

Meter indication at 3% third-

harmonic distortion: 1 $\frac{7}{8}$ ips, +1

dB; 3 $\frac{3}{4}$ ips, +2 dB

Signal-to-noise ratios (1 $\frac{7}{8}$ ips):

	Unwtd.	A-wtd.	CCIR
NR off	52.6	57.5	55.6
Dolby B	59.8	67.2	66.0
Dolby C	61.5	72.0	75.1

Signal-to-noise ratios (3 $\frac{3}{4}$ ips):

	Unwtd.	A-wtd.	CCIR
NR off	59.8	65.8	63.6
Dolby B	62.4	73.4	73.4
Dolby C	63.5	80.4	82.2

Tape used: TDK SA (Type II, chrome-equivalent)

IEC 0-dB distortion: 1 $\frac{7}{8}$ ips, 0.72%;

3 $\frac{3}{4}$ ips, 0.54%

Meter indication at 3% third-

harmonic distortion: 1 $\frac{7}{8}$ ips, +4

dB; 3 $\frac{3}{4}$ ips, +4 dB

Signal-to-noise ratios (1 $\frac{7}{8}$ ips):

	Unwtd.	A-wtd.	CCIR
NR off	55.4	59.5	56.4
Dolby B	61.5	68.4	66.5
Dolby C	63.4	75.3	76.0

Signal-to-noise ratios (3 $\frac{3}{4}$ ips):

	Unwtd.	A-wtd.	CCIR
NR off	58.5	62.8	60.1
Dolby B	62.5	71.2	70.0
Dolby C	63.8	78.5	79.2

Tape used: Sony FeCr (Type III, ferrichrome)

IEC 0-dB distortion: 1 $\frac{7}{8}$ ips,

0.73%; 3 $\frac{3}{4}$ ips, 0.40%

Meter indication at 3% third-

harmonic distortion: 1 $\frac{7}{8}$ ips, +4

dB; 3 $\frac{3}{4}$ ips, +4 dB

Signal-to-noise ratios (1 $\frac{7}{8}$ ips):

	Unwtd.	A-wtd.	CCIR
NR off	58.0	63.1	60.9
Dolby B	63.0	71.6	71.0
Dolby C	64.5	77.8	80.0

Signal-to-noise ratios (3 $\frac{3}{4}$ ips):

	Unwtd.	A-wtd.	CCIR
NR off	61.0	66.4	64.6
Dolby B	63.8	73.9	74.4
Dolby C	64.8	81.2	83.3

Tape used: TDK MA-R (Type IV, metal)

IEC 0-dB distortion: 1 $\frac{7}{8}$ ips,

0.42%; 3 $\frac{3}{4}$ ips, 0.36%

Meter indication at 3%

third-harmonic distortion: 1 $\frac{7}{8}$

ips, +4 dB; 3 $\frac{3}{4}$ ips, +4 dB

Signal-to-noise ratios (1 $\frac{7}{8}$ ips):

	Unwtd.	A-wtd.	CCIR
NR off	59.4	63.8	61.1
Dolby B	65.0	72.9	71.5
Dolby C	66.5	79.6	81.2

Signal-to-noise ratios (3 $\frac{3}{4}$ ips):

	Unwtd.	A-wtd.	CCIR
NR off	61.9	66.9	64.7
Dolby B	65.5	75.2	74.2
Dolby C	66.5	82.0	83.3

put. Switches are provided for the FM-multiplex filter, for external timer operations, and for memory search, rewind, and replay.

The ADS C3 measures 1 $\frac{7}{2}$ inches wide, 2 $\frac{3}{4}$ inches high, and 14 $\frac{1}{4}$ inches deep. It weighs slightly under 20 pounds. Price: \$799. Analog & Digital Systems, Inc., Dept. SR, One Progress Way, Wilmington, MA 01887.

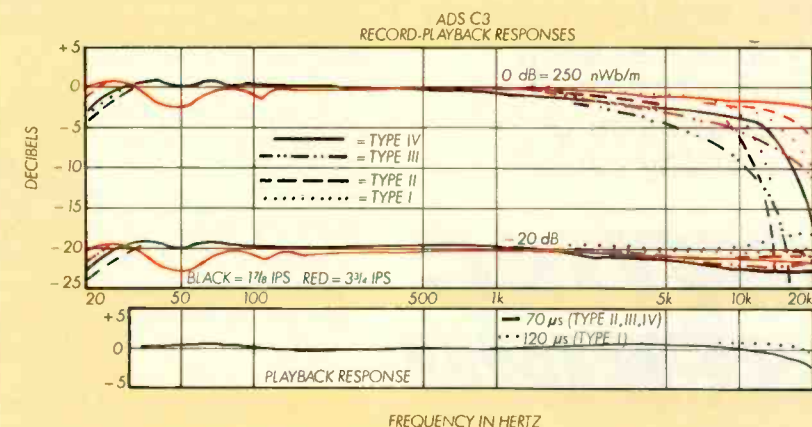
Lab Tests

As measured with our IEC-standard BASF test tapes, the playback response of the C3 was spectacularly flat in its ferric position and showed only a mild rolloff (-3 dB at 18,000 Hz) with the chrome/metal setting. For our overall record-playback tests we used the recommended TDK MA (metal), Sony FeCr (ferrichrome), TDK SA (chrome-equivalent), and TDK AD (ferric) tapes, checking performance both at the normal 1 $\frac{7}{8}$ -ips tape speed and at the higher, 3 $\frac{3}{4}$ -ips speed, which ADS recommends particularly for live recording or for dubbing digitally recorded material.

At the -20-dB level used for frequency-response tests, the 20- to 20,000-Hz results with all four tapes were within +1, -2 dB at the higher speed and within +1.5, -3.5 dB at the lower speed. At the IEC 0-dB level (250 nanowebers per meter), the high-frequency limitations of ferrichrome tape were painfully evident. The high-frequency rolloff shown in the curves is not the fault of the C3 or of the Sony tape (a BASF Professional III sample tested essentially identically), but of Type III tape in general. With the three other, more common tapes, the high-frequency improvement that's achievable by switching from the conventional 1 $\frac{7}{8}$ ips to 3 $\frac{3}{4}$ ips was no less apparent than the rolloff with ferrichrome, and it was evident in our listening evaluation as well.

We measured the wow-and-flutter of the ADS C3 in two ways: first, as usual, with our 1 $\frac{7}{8}$ -ips Teac test tape; and second, on a record-

The record-playback graph (top) for the ADS C3 deck superimposes curves for the standard 1 $\frac{7}{8}$ -ips tape speed (black) on those for the faster, higher-performance 3 $\frac{3}{4}$ -ips speed (red).



rewind-replay basis so we could check the performance at 3¾ ips as well. Since the latter measurements involve two separate tape passes, it is common practice to multiply them by the factor 0.707 to derive the single-pass equivalent. When this is done, our 3¾-ips measurements fall within ADS's specs.

Our signal-to-noise measurements ranged from good, at the lower speed, to extremely good, at the higher. Playback speed was exact, and Dolby tracking error, measured in the monitor mode, was very low. The tracking error should be even less in normal playback, since the ADS C3 is perhaps unique among cassette decks in using the same Dolby processor chip for normal playback decoding as for record encoding. (In the monitor mode during simultaneous playback and recording, a separate Dolby playback chip is used.) Fast-winding speeds, input sensitivity, and microphone-input overload characteristics were all average.

Comments

Debate over the advantages and disadvantages of a 3¾-ips cassette speed has arisen numerous times in the past, and the matter is probably incapable of definitive resolution. From our listening tests with the ADS C3, however, we were driven

to conclude that in this case, at least, the decrease in uninterrupted recording time and, of course, higher tape cost from using the faster speed are definitely worth it. At the normal speed, our tape copies, though good, could clearly be distinguished by ear from their sources. The increase in recorded clarity that resulted from switching to the 3¾-ips speed raised the C3's performance to the very top levels. While the wow-and-flutter did not measure as much less at the higher speed as we might have expected, audibly it was greatly lowered.

From a human-engineering viewpoint, we found the ADS C3 generally very easy to use. It radiates an aura of reassuring solidity. We would have preferred a somewhat larger source/monitor pushbutton and would have designed the solenoid transport system to permit going immediately from play into a fast-wind mode without going first through stop, but these are very minor details. Unless you are positively wedded to the traditional cassette-well design, you will have little difficulty in adjusting to and appreciating the merits of the C3's top-loading drawer system. In sum, we found the ADS C3 to be a solid performer with an unusual and appealing design.

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THE recorded-music industry, throughout most of its nearly one hundred years of existence, has shown itself to be profoundly conservative. It consistently supported the basic storage medium of the analog, stylus-groove phonograph record from the 1890's until the beginning of this decade. While the industry has permitted itself certain evolutionary improvements—electrically cut records in 1923, microgroove LP's and 45's in 1948, stereophonic records in 1958, and quadraphonic records a dozen years ago—the rule for all such innovations was that compatibility with pre-existing disc formats be maintained.

But in 1983 the industry introduced the digital, laser-scanned Compact Disc and broke that rule. The Compact Disc is not a refinement of the phonograph record, but a rival, incompatible format aimed at the same market niche. The audio consumer is being asked to change over and to make a decisive break with the past. Will he do it?

Evidently he will. By industry estimates, so far in the United States almost 400,000 CD players have been sold, and the manner in which the market for players and discs is growing suggests that Compact Discs will eventually supersede phonograph records, if not entirely, at least very largely. The weight of industry opinion sees CD dominance over the phonograph by 1990 if not before. Although industry spokespersons do have a strong vested interest in promoting the new format, and the figure of 400,000 itself is not very impressive when compared with the sixty to eighty million turntables in the U.S., strong evidence exists to support the notion of a very rapid changeover. At this point the CD is very, very unlikely to fail, and its progress far surpasses initial predictions.

Why is the success of the new format so certain? For a great number of reasons. The most significant of these are: (1) the unanimity of manufacturers in adopting uniform

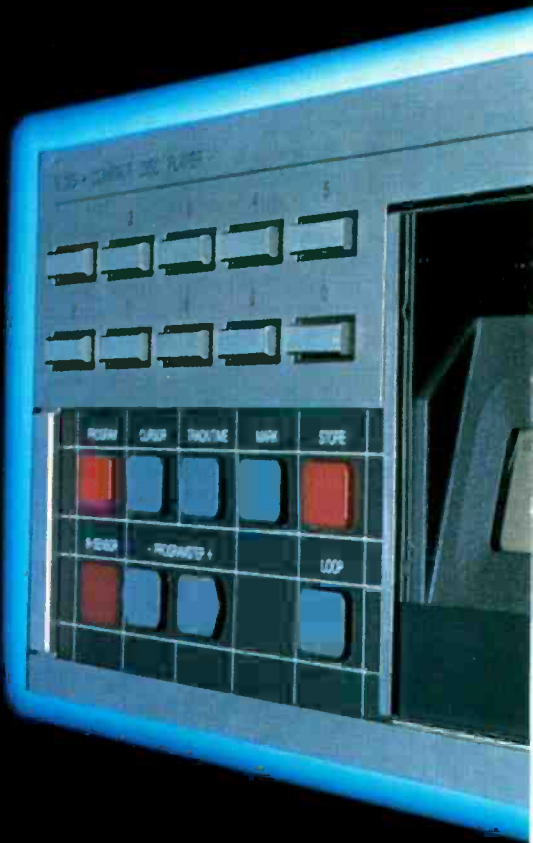
standards for digital mastering and for the Compact Disc itself, (2) the successful prior marketing of digitally mastered phonograph records, (3) the extensive promotional efforts by hardware and software manufacturers, (4) the rapid licensing of hardware and software manufacturers, (5) the high profitability of Compact Discs for manufacturers and retailers, (6) the cautious introduction of hardware and the successful wooing of the crucial enthusiast market, and (7) ultimately the attitude of the buying public toward the new format.

But beyond all of these individual reasons lies the collective determination of the audio industry to introduce a product that would stimulate explosive growth analogous to that which it experienced in the Sixties and early Seventies. By 1975 growth in home audio was flattening out, and by the time the Compact Disc was introduced in 1983 growth had virtually ceased. In 1984, for the first time in three years, the industry enjoyed double-digit growth, and much of that growth was due to the success of the CD. The Compact Disc was an enormous gamble to revive a slack industry. It seems to have paid off.

A New Technology

In a technical sense the Compact Disc represents the convergence of two technologies, digital encoding of audio frequencies and laser-scanned optical-disc data storage. This convergence represents a deliberate choice on the part of the industry. The industry could have opted for an analog laser-scanned optical audio disc (similar to the audio tracks on a video disc), but it did not, primarily because of prior developments in the recording industry favoring a digital medium.

Digital recording was done experimentally at MIT in the 1950's and was subject to serious development in the late Sixties and early Seventies by the British Broadcasting Company and by Nippon Columbia (Denon). The promise of digital recording was an ability to preserve



BY DANIEL SWEENEY

TO STAY

ENTHUSIASTIC PUBLIC
RESPONSE TO THE
DIGITAL COMPACT DISC
HAS REJUVENATED THE
AUDIO INDUSTRY



REVOX

INFRARED REMOTE CONTROLLED SYSTEM

REPEAT PLAY / NEXT STOP LOAD

POWER

007 9800

COMPACT
DISC
DIGITAL AUDIO

DISPLAY



AUTOSTOP

CAL TONE

- VOLUME +

PHONES



high-quality audio information indefinitely and to provide for exact copies of master recordings, considerations that were becoming increasingly important in the 1970's with the advent of multi-million-selling albums. The analog master tapes of certain smash hits, such as Fleetwood Mac's *Rumours*, were literally played to death to make copies or "running masters" for the pressing plants. In an age of enormous production runs analog recording was showing its limitations.

But it was in classical rather than popular music that digital mastering really made its initial impact. In the early Seventies the first digitally mastered classical LP's were issued by Denon, and by 1977 a number of small audiophile labels such as Telarc and Delos had adopted digital mastering and were winning adherents in the small but influential audiophile community. By 1979 most of the major classical labels had begun releasing digitally mastered phonograph records and selling them at premium prices. Digitally mastered recordings quickly caught on among classical buyers (a small group, but disproportionately heavy spenders on both hardware and software), and by the close of 1982, the majority of new classical releases were digitally mastered. Now, in 1985, no major classical label still masters only in analog and just a handful of smaller classical labels continue to do so.

In popular music the progress of digital mastering has not been so swift. Most popular recordings are made on twenty-four- or thirty-two-track machines, and digital versions of the same are still rare and extremely expensive. But digital mastering is steadily increasing in the pop field, and, in any case, a Compact Disc can easily be produced from an analog master. The continued use of analog tape recorders in pop music is not likely to

retard the progress of the Compact Disc. It hasn't held it back so far.

Digital mastering itself was only a prelude—a testing of the waters, so to speak—and the digitally mastered LP has provided merely a transition period during which the record-buying public could be educated as to the advantages of digital recording. Even before digital mastering had assumed dominance within the small classical enclave, the Japanese consumer electronics industry had already made its collective decision to launch a new consumer format.

A Single Format

According to Marc Finer, a spokesman for Sony's audio division, both Sony Corporation and Philips of the Netherlands worked independently during the early Seventies to develop a laser-scanned, optical-recording, digital disc format. Both companies succeeded in developing a practical product, and during 1977 and 1978 they compared their work and agreed to develop a single standard, a 4.72-inch (12-centimeter) disc encoded with a sixteen-bit digital signal. In 1978 Sony and Philips jointly proposed the new medium as a standard consumer format to the powerful Electronic Industries Association of Japan. In 1980 the Sony-Philips standard was accepted, and licenses were issued to manufacturers throughout the world.

In the meantime, Philips, in conjunction with Pioneer, had introduced a laser-scanned audio/video format called LaserVision. LaserVision demonstrated the effectiveness of the new optical storage system (albeit within an analog format), although it failed to make a major impact on the video scene, coming as it did at time when VCR formats were proliferating in that chaotic new market. The Compact Disc, arriving a full five years after LaserVision, does not suffer from the format rivalry still troubling the video field, and that factor in very large measure accounts for the CD's success thus far and will assure its future success as well.

The matter of the standardization of the CD format cannot be stressed

too strongly, for in the past format wars have had a stifling effect on innovation in the consumer electronics industry in general and on audio in particular. Look back on the audio industry over the past quarter of a century. Stereo phonograph records arrived in a single format, and they almost completely replaced mono LP's in seven years. In analog tape, on the other hand, five rival formats battled it out through the Sixties and Seventies—open-reel, four-track, eight-track, cassette, and elcassette. The cassette took a good fifteen years to assume dominance, more than twenty to assume its present total dominance.

Most chastening to the industry was the quadraphonic (four-channel) surround-sound phonograph record. The quad format rivalry proved not just troublesome but fatal. No fewer than six formats strove for public acceptance—Electro-Voice Matrix, QS, SQ, CD-4, UD-4, and Ambisonics. Today they're all dead or virtually dead.

The major audio manufacturers had no wish to repeat the disasters of the quad era or the near disaster of analog tape, and the Compact Disc was brought out in one format and one format only. There were other digital-disc formats proposed, but they lost out fairly early to the CD. Today Compact Discs are manufactured in standard form for scores of record labels around the world, and the basic CD standards will almost certainly remain unaltered at least until the year 2000.

By 1981 the industry was ready to introduce the CD and began demonstrating it at engineering conferences, but a worldwide recession delayed mass production. An economic upturn in 1983 signaled that the time had come, and players and discs appeared in the U.S. during the fall of that year (they had appeared in Japan a year before). In a matter of three months, 30,000 to 40,000 players were sold in spite of poor availability of discs and retail prices for players in the \$1,000 range. Last year 225,000 to 230,000 CD players were sold (figures provided by Electronic Industries Association and by *Audio Times*). *Audio Times* estimates that 500,000 more



will be sold in 1985. Contrast this with LaserVision video, available here since 1978. Less than 250,000 LaserVision machines have been sold in the U.S. in over six years.

In under two years the Compact Disc player has proved a phenomenally successful medium. Even if sales flattened out, the industry would still have a strong stake in the format. But in fact sales have been increasing every month. Moreover, with player prices, at least on close-outs, as low as \$200, and with players appearing in \$600 rack systems, CD is now available at every level of the market. Even the casual buyer of midline stereo equipment is being confronted with the CD player as a component choice.

According to Sony's Finer, "By the end of the decade, there will be no reason to buy a turntable on cost considerations. Low-end CD players will be competitively priced with low-end turntables. The phonograph will become obsolete."

Software sales have been more dramatic still. The players, though remarkably hot sellers for a new medium, accounted for only a little over 3 percent of total consumer audio sales in the U.S. last year. But in record stores CD's account for at least 10 percent of retail dollars nationwide, and many retailers claim they could sell twice the number of the discs they do now if the pressing plants could supply them. In major cities Compact Discs can account for a significant fraction of dollar volume for the software retailer. The Laury's chain in Chicago does about 50 percent of its dollar volume in CD's, while Tower Records in Washington, D.C., does roughly 33 percent. Tower Records in New York and Los Angeles both report 15 to 20 percent.

According to Robin Ahrold, a spokesman for RCA, these high sales figures reflect the fact that people who buy CD players are frequent purchasers of software. Many appear to be in the process of rebuilding their record collections. Ahrold adds that they are frequently the same individuals who purchased phonograph records heavily in the past, and in many cases they continue to buy LP's heavily too,

supporting both formats as it were.

It should be noted here that the American recording industry is basically supported by a relatively small number of individuals who buy at least ten records a year. These same heavy buyers, who comprise only about 5 percent of the owners of component stereo systems, are evidently flocking to the CD medium, thus accounting for the fact that at least forty times as many CD's as CD players were sold last year in the U.S. market. This augurs well for the future of the medium, because it shows that a significant percentage of the influential enthusiast buyers have already been won over.

Is the LP Doomed?

Perhaps not coincidentally, last year was generally a slow period for the audiophile LP. Sales of the latter, particularly of audiophile Japanese pressings of popular releases, have fallen off markedly, and many of the audiophile labels are now doing the bulk of their business in Compact Discs. Sheffield Lab and Reference Recordings, two of the best and most prominent such labels, are both deriving approximately 70 percent of their revenues from the sale of CD's, even though spokespersons for both companies have avowed the sonic superiority of state-of-the-art analog records over the Compact Disc. By contrast, Delos and Telarc, two audiophile labels that embraced digital recording from the onset, do 80 and 90 percent of their respective dollar volumes in CD's.

Of course, black vinyl still rules the recording industry as a whole, but record-company executives are not lamenting its imminent decline. "Vinyl is an almost impossible medium to work in," says Emilia Heygood, founder of Delos Records, reflecting a common complaint in the industry. "It's so hard to get a [master disc] recording right, and the [pressing] rejection rate is so high. With CD's, as long as you're dealing with an established plant, the quality control and consistency are very good."

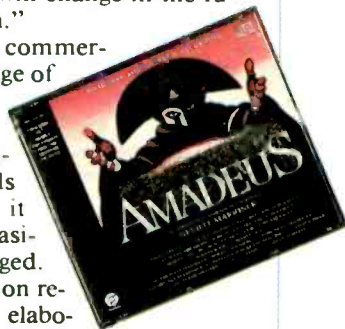
Elliott Mazer, a noted independent record producer, concurs.

"The rejection rate for CD's is much lower than for phonograph records. Records are a headache, but right now they cost less than half as much to produce. The cost differential will change in the future, though."

Another commercial advantage of the Compact Disc is that, unlike records and tapes, it cannot be easily bootlegged. CD production requires very elaborate industrial facilities. Organized crime will not soon be able to operate anything so conspicuous as a CD pressing plant, and the record industry knows this. With losses from bootlegging running into the tens of millions, the industry has strong grounds to support the CD format for reasons of profitability alone.

And the recording industry has supported the CD unconditionally. An indication of the seriousness of industry commitment is the current number of titles available in the format. Over 2,500 CD titles have been released so far, and more than 5,000 should be available by the end of the year. At first, program material was heavily weighted toward classical music, but currently almost all styles of music are represented, and the simultaneous release of popular and classical albums on phonograph record, cassette, and CD has become commonplace. Contrast this with the quadraphonic debacle: quad releases numbered only in the hundreds at the format's height.

Still another factor suggesting a rapid transition is the situation of triple inventory (LP's, CD's, cassettes) currently facing record retailers. They'd prefer a single medium. Retailer objections to multiple inventories helped to kill quad and retarded the growth of the cassette market for years. The same objections at first worked against the Compact Disc, but now that retailers realize that the medium has won acceptance and is in the ascendent, they look forward to the disappearance. (Continued on page 87)



THE NEW COMPACT

Flexibility, reliability, value for the dollar—the music lover shopping for a Compact Disc player has never had it so good.

If you've taken a long time in deciding which Compact Disc player is your "Dream Machine," you may be in for a surprise when you finally go to buy it. Many of the models available just last year no longer exist. They've been replaced, in most cases, with third- and even fourth-generation equipment that offers more value for the dollar, more feature options, and more variety in size and styling than ever before.

Whether you want just a basic, no-frills machine or a deluxe, fully programmable model, you'll have a lot to choose from, and you can expect to get a lot more for your money. One approach to this happy state of affairs is to upgrade your "wish list," getting more features with the same budget. Another is to buy a machine in the same category you originally intended but to invest the money you save in a larger initial collection of Compact Discs

so much equipment that many manufacturers sold out their inventories. Instead of then producing more of the same players, they decided to bring out new models incorporating all the technological advances of the past year. The newer models have also benefited from the economies of scale that manufacturing for a larger market makes possible, thus bringing prices down.

The new CD players are both more convenient and more flexible to use than typical players of the past two years. More of the players have index-point cueing. They offer more programming and accessing options, faster access to individual tracks, more useful dis-



Toshiba's XR-V22 can play two CD's in succession or a program of tracks from both discs. One CD can be changed while the other is playing. \$499.95.

that you can play on it.

One reason for the unusually rapid developments in CD players is that when the CD format finally caught on, music lovers snapped up

plays and readouts, more reliable drive systems, better error-correction and tracking capabilities, greater resistance to shock and vibration, and better electronics and



DISC PLAYERS

by Fred Petras



Denon's DCD-1300R (above), a third-generation player, features remote control, a proprietary Direct Digital-to-Analog Converter, and extensive programming facilities. \$949.

Mission's DAD 7000 is a highly modified Philips CD player with Mission-designed circuitry that's claimed to make it "sound better" than other players. \$649.

The new Compact Disc players are both more convenient and more flexible to use than the typical players of the past two years. They offer faster access, more useful displays, more reliable drives, better error correction, and better disc-tracking capabilities.



You now have a choice of more features for the same budget, or you can buy a CD player in the same category you originally intended and invest your savings in a larger initial collection of Compact Discs to play on it.



Hitachi's DA-4000 is a mid-sized player with many features, including skip search and a video-subcode output port for future graphics-programmed CD's. \$400.

filtering systems. There are more models with remote controls, and more functions can be controlled remotely. Overall, the music lover shopping for a CD player has never had it so good, and there's no longer much of a valid excuse for not buying one.

While a few recent models have features or characteristics that are unique or outstanding, in general the trend in CD hardware is toward a steady refinement of the existing technology to produce reasonably priced, practical home players. Although a few manufacturers claim to have produced CD players that "sound better" than previous models, it is advisable to keep such claims in perspective. Except for minor frequency-response differences, all properly operating CD players sound very good—it's in the nature of the format. It is more useful to evaluate CD players in terms of their features.

Remote Control

Quite a few more CD players now come with wireless infrared remote controls—and at lower prices. Last year \$600 was the typical price for a remote-controllable CD player. The latest crop has several for substantially less, including Sony's CDP-102 (\$450), Pioneer's PD-7010 (\$460), Yamaha's CD-3 (\$499), Technics' SL-P2 (\$500), and Sherwood's CDP-220 (\$500).

Last year Sony introduced the first players with wireless remotes

incorporating a volume control, the CDP-610ES (\$850) and CDP-400 (\$800). This year Technics also offers such a remote, for its deluxe SL-P3 (\$600). Some of the remote controls are pretty basic, with a minimum of pushbuttons, and there seems to be no relationship between the number of buttons and the player's price. For instance, the \$1,295 Nakamichi OMS-7 has a seven-function remote control, while the \$600 Technics SL-P3 has a remote with twenty-four keys, ten of them for program selection. Some remotes just duplicate most of the controls on the player itself, but others have extra controls that are *not* on the player panel, such as JVC's XLV400 (\$430).

Programming

Last year, random-access programming capabilities were available in about half of the CD players

then in the stores, generally in models priced at \$500 and up. Far more of the latest introductions have such capabilities, including about sixty models from some thirty manufacturers. And, as with remote-control features, the starting prices for programmable models are lower, with several at less than \$400. Sanyo even offers random-access programming in three models all priced at \$299.95, the CD660, CD760, and CD667.

Random-access programming makes it possible for you to play recorded musical selections in the order *you* want to hear them, rather than in the order chosen by the disc's producer. I predict that as the technology advances and prices drop even further, CD players offering only straight sequential playback will follow cassette decks without Dolby noise reduction into extinction.

While most programmable machines can sequence between nine and twenty different selections, several new entrants go beyond that limit. For example, Pioneer's new PD-5010 (\$300) can program up to twenty-seven tracks, and the same company's PD-7010 (\$460) and PD-9010X (\$540) can each handle up to thirty-two programmed selections. Topping the list in terms of programming capability are the Mission DAD 7000 (\$649) and 7000R (with remote, \$749), the Kenwood DP-1100II (\$635), and Sanyo's CD660, CD667, and CD760, all of which can program up to *ninety-nine* tracks in any sequence. This impressive capability may be "a feature developed ahead of a market for it," as a Sanyo representative told me, since to my knowledge only CD test discs have that many tracks.



The Carver CD player is equipped with Carver's proprietary Digital Time Lens, which boosts the midrange reverberant music content in order to make CD's "sound less digital." \$650.

Indexing

Buyers are sometimes confused between *programming* and *indexing*. At press time only Mission, Kenwood, and Sanyo models can program up to ninety-nine tracks on a CD for playback in a desired sequence, but several other players can directly access as many as ninety-nine points on a disc using the digitally encoded *index numbers* inserted by the disc manufacturer. A popular-music or jazz CD might have, say, only ten individual

track simply by pressing the button repeatedly until the desired section of the disc is reached. The feature generally operates in both forward and reverse, as in Onkyo's DX-150 (\$399) and DX-200 (\$699), Nakamichi's OMS-5 (\$995) and OMS-7 (\$1,295), the rack-mountable Nikko NCD-100 (\$799), the Technics SL-P3, SL-P2, and SL-P1 (\$400), and Kyocera's DA810 (\$1,100).

The same capability goes under other names as well, such as Program Skip in Akai's CD-A7 (\$600), Self Program Search System in Hi-

mal. During scanning the elapsed-program-time counter indicates the pickup's current position within a selection. High-speed search/scanning appears in several other models, including the Carver Compact Disc player (\$650), the JVC XLV200 (\$299), Kenwood's DP-1100II (\$635), the Magnavox FD3040SL, the Marantz CD-64 (\$399), McIntosh's MCD 7000 (\$1,395), Sherwood's CDP 220, and Sylvania's FDD104SL (\$450).

Some search/scan systems automatically stop and play a short sample of the music, ranging from 3 seconds up to 10 seconds or more, as in the Auto Music Scan system of the Marantz CD-74 and the IntroScan system of the Ultrax CP400. The McIntosh MCD 7000 permits a 10-second preview of a disc's content using the Programming Music Scan button on its remote control. Luxman's D-03 (\$1,500) and D-405 (\$600) also offer automatic 10-second sampling through their Cue/Review functions, and JVC's XLV500 offers 15-second previewing with its IntroScan. The Auto Music Scan in the Technics SL-P2 and SL-P3 permits variable sampling times ranging from a few seconds up to 99 seconds, selected by numbered control keys.

Few of last year's CD players had *index-search* capability, which lets you command the machine to start playback at a certain index point other than at the beginning of the disc or of a track. The reason was a dearth of CD's with index points encoded on them. More such discs



Kenwood's DP-1100II is said to be an improved version of last year's DP-1100. It has remote control and extensive programming features, including index search and random access to up to ninety-nine tracks. \$635.

tracks, each consisting of a complete song or instrumental composition, but each of those tracks could have several passages indexed for quick access if desired. Similarly, a classical CD might consist only of a single long work (with or without track breaks between sections), but it could be provided with dozens of index points in order to locate themes, leitmotifs, arias, solo passages, and so on.

A CD player's ability to access indexed passages on a disc is thus distinct from its ability to play selected tracks in a desired order. For example, while Sony's CDP-520ES (\$600) and CDP-650ES (\$1,300) can be programmed for "only" sixteen tracks, they are capable of locating up to ninety-nine indexed passages, using either the front-panel controls or their remote-control units.

Searching


A *skip-search* feature was common in last year's CD players, and it seems to be even more popular this year judging from the many 1985 models that provide it. Skip-search buttons offer access to any particular track or index point within a

tachi's DA-4000 (\$400), Music Skip in the Magnavox FD3040SL (\$569.95) and the Teac PD-500 (\$750), Automatic Program Search System (APSS) in Sharp's DX-600 (\$450) and DX-100 (\$400), Quick Program Selector in Toshiba's XR-V11 (\$399.95) and XR-V40 (\$399.95), and Delete Programming

Kyocera's DA-810 uses a D/A converter system with digital filters, third-order Bessel filters, and independent left- and right-channel D/A converters for maximum separation and minimum phase error. \$1,100.

in Marantz's CD-74 (\$700) and Sylvania's FDD304SL (\$600).

Skip-search can work with other search-and-scan systems. Depress the FAST control in either forward or reverse on the Ultrax CP400 (\$700), for example, and the laser pickup will scan across the disc at five times normal speed; after 3 seconds, the scanning speed automatically increases to twenty-two times nor-



are now available, and more are on the way, so you'll find this feature in many new players. Among them are Teac's PD500, Yamaha's CD-X2 (\$400) and CD-3 (\$500), Quasar's CD8975 (\$400 in a metal cabinet or \$425 in a simulated-wood-grain cabinet), Ultrax's CP400, Marantz's CD-74, Sanyo's CD660, 667, and 760, Mission's DAD 7000 and 7000R, Kenwood's DP-1100II,



Technics has one of the lowest-priced players with remote control, the \$500 SL-P2. It features a Disc Prism that lets the user see the CD spinning inside the player, and many other features are also shared with the \$600 SL-P3 tested for last month's issue.

Kyocera's DA-810, Pioneer's PD-701, PD-9010, and P-DX700, and Scott's 949DA (\$379.95) and 959DA (\$449.95).

Displays

The new CD equipment for 1985 by and large has better display facilities than last year's. For instance, the NEC CD-607E (\$599) has six different time displays. It can show the total playing time of the disc, the remaining playing time of the disc, the elapsed time of the disc, the total playing time of the track being played, the remaining playing time of the track, and the elapsed time from the beginning of the track.

In addition to showing track numbers and playing times, some machines display other functions.

The Technics SL-P3, for example, shows the output-level setting via an LED readout on its panel. The SL-P3, SL-P2, and SL-P1 also feature a Disc Prism, which shows by reflected images in a slot above the disc drawer

While most Compact Disc players sound equally good even to critical listeners, they are far from equal in their resistance to external shock and vibration. Some machines are quite touchy, highly susceptible even to slight nudges and to bass sounds emanating from the loudspeakers.

that a disc has been loaded into the player. The Revox B225 (\$1,150) has a similar viewing prism.

Headphones

Listening to Compact Discs on headphones is the best way to appreciate them according to many dedicated music lovers. Because headphones can eliminate the extraneous noises that often disturb listening to speakers in typical home

surroundings, they are said to extract every nuance of the CD format's music-reproduction capability. Accordingly, most manufacturers have equipped their 1985 CD players with front-panel headphone jacks. Some have even gone a welcome step beyond by incorporating separate headphone volume controls next to the jack for more convenient operation. Players with this feature include the Nakamichi OMS-7, NEC CD-607E, Akai CD-A7, JVC XLV500, McIntosh MCD 7000, Luxman D-03 and D-405, Nikko NCD-100, Kenwood DP-1100II, Sony CDP-302, Technics SL-P2 and SL-P3, Toshiba XR-40, Ultrix CP400, Yamaha CD-X2 and CD-3, and Scott 959DA.

Shock Resistance

While most CD players sound equally good even to critical listeners, they are far from equal in their resistance to shock and vibration. Some machines are quite touchy,



Onkyo's DX-150 can be programmed to play up to sixteen tracks in any order. It also has skip search, block repeat, and other functions. Double oversampling is said to insure optimal sound quality. \$400.

highly susceptible even to slight nudges of the player and to bass sounds emanating from the loudspeakers through which they are being played. Several companies have addressed themselves to the problem. Nakamichi, for instance, uses a "floating" drive system for its OMS-7 and OMS-5; the drive mechanism is mounted on a die-cast base suspended on coil springs so as to float free of the main chassis. The system is said to make the players virtually impervious to external shock.

Kyocera's DA-810 uses a ceramic-base platform, a specially treated top cover, a specially constructed heat sink, and mechanical parts made of special alloys and ceramics in order to eliminate unwanted resonances and vibrations in its D/A converter system. JVC's XLV500 features an independent suspension system to isolate the laser pickups from shock and vibration for

greater tracking accuracy. And Onkyo's Integra Series DX-200 features a special chassis construction, deadened with a newly developed material called Polysorb, that absorbs extraneous mechanical and external vibrations to prevent mistracking and to reduce microphone-induced distortion.

Subcodes

The Compact Disc can store more than just music. It can also store other types of digital information at the same time. For instance, in addition to music, a CD could encode graphic information that can be "played" on a video monitor linked to the player in an audio/video setup. Many of the third-generation CD players now or soon to be available have a *subcode port* for use with the coming generation of graphics-encoded Compact Discs. Such ports are included in Sony's four regular players, the Technics SL-P3, the Pioneer PD-5010, PD-7010, and PD-9010, the Hitachi DA-4000, and the Sherwood CDP-200 and CDP-220, among others.



Pioneer's PD-9010X, one of its Elite Series components, features full random-access programming for up to thirty-two tracks, two-speed audible scan, a digital filter, and wireless remote control. \$540.

delay for a 2-second pause between selections as well as "shuffle play," a random track resequencing that rearranges song sequences on CD's "to add new interest to familiar discs," according to the company. And the CDP-650ESD can stand alone as a high-quality CD player using its own integral digital-to-analog converter, or it can be used with a new outboard D/A converter, the DAS-702ES (about \$1,500), as a "super-fidelity" player that can accommodate four different sampling frequencies.

Quasar's CD-8975 is available in a metal cabinet (\$400) or simulated wood (shown, \$425). It has fifteen-track random-access programming, skip forward/back, program search, and index search.



The most unusual CD players in the 1985 lineup are a "double" player from Toshiba, the miniature home/portable player from Sony, and the combination CD/video-disc players developed by Pioneer and sold by Pioneer, Teac, Luxman, and NAD. All these are quite likely to be significant influences on next year's CD hardware.

The Toshiba XR-V22 (\$499.95) has two side-by-side disc drawers. By loading two CD's in it, you can program up to thirty tracks from either disc or enjoy up to two hours of uninterrupted music if you play the discs sequentially; one disc can be changed while the other is playing. The XR-V22 also offers quick random access and automatic repeat, among other features.

Special Features

Several of the new 1985 CD machines offer features beyond the usual. The Scott 949DA and 959DA, Nikko NCD-100, Sony CDP-650ESD, and Yamaha CD-3 are all capable of automatic playback with the use of an external audio timer. The rack-mountable Carver Compact Disc player incorporates a new switchable circuit called the Digital Time Lens; by compensating for left/right signal-content anomalies of CD's, the circuit is said to improve ambience, balance, and musicality. Sony's CDP-650ESD has switchable auto

Sony's \$300 D-5, reviewed here last December, is still the "world's smallest CD player," measuring a mere 5 x 5/4 x 1/2 inches. The D-5 can be plugged into a home hi-fi system or used on the move with its optional battery-pack/carrying case and headphones. Its features include an Automatic Music Sensor for forward/back scanning, Music Search for high-speed previewing of disc content, and a basic time/battery-condition display.

Pioneer's CLD-900 (\$1,200), reviewed in the February 1985 issue, was the world's first combination Compact Disc/LaserDisc player. The front-loading player, with wireless remote control, has all the usual functions of both LaserDisc and CD players, including random access by frame and chapter search for video discs and track search, index search, scan, one-program selection repeat, and forward-skip selection for CD's. The set automatically adjusts itself for the type of disc to be played. It also has an I/O port for connection to a personal computer.

The Luxman D-408 (\$1,300), the Teac LV-5000VS (\$1,300), and the NAD 5900 (\$1,200) are essentially the same as the Pioneer CLD-900. These players are all made by Pioneer to the particular seller's specifications. (Trade reports indicate that Pioneer will manufacture still more versions of its combo player for marketing under additional major brand names.)

At press time, many of the machines mentioned in this article were still being readied for full production. Consequently, you may find that the store models of some machines have more features than our advance news indicated.

While many of the newest models were scheduled for introduction in June at the Summer Consumer Electronics Show, not all will be available that soon. But you won't have long to wait now, and these remarkable machines are well worth waiting for. □

CD-PLAYER FILTERS

The advantages and disadvantages of digital and analog output filters in Compact Disc players

by David Ranada

ADVERTISEMENTS for many of the latest Compact Disc players extoll their use of "digital filters" rather than the supposedly passé analog variety used in earlier designs. Is this puffery to be believed? Well, yes and no. Digital output filtering in a CD player can be considered desirable, but not necessarily for the reasons many of the the ads would have you believe. To understand this state of affairs requires knowing why CD players need filters at all.

One of the two fundamental processes of digital audio recording is called *sampling*; the other is *quantization*. Sampling is the capturing or freezing of the amplitude of the audio signal at regular, very closely spaced intervals. Quantization is the conversion of each sample into a number via an electronic measurement process. In the CD system a sample of each audio channel is taken every 22.6757 millionths of a second. Correctly performed by a digital-audio recorder, sampling does not alter the original signal in any way.

Sampling does, however, add to the original audio signal a great deal of extraneous high-frequency energy. Suppose you wanted to make a digital recording of a musical work with a wide frequency range. The green area in Figure 1 below represents the music and contains all audio frequencies up to 20,000 Hz. The red areas show what would be added to the original signal by the sampling process. The original signal is untainted by sampling, and since the added energy is all above 20,000 Hz, it is ultrasonic and inaudible. The whole green-plus-red spectrum is encoded by a digital tape recorder, survives the mass-duplication process, and appears as the digital-audio data signal on a Compact Disc pressing.

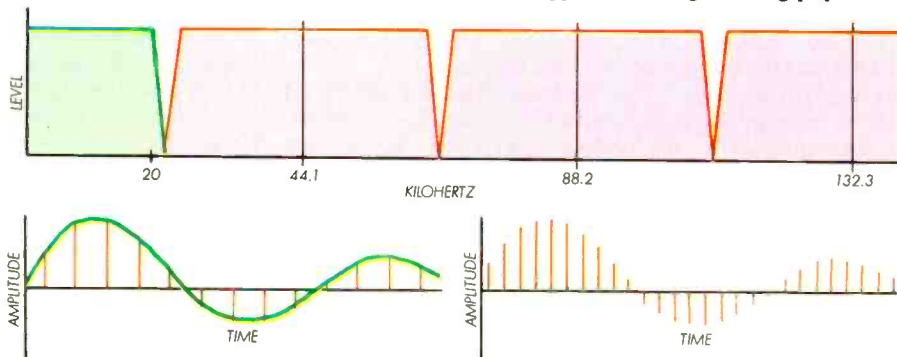
You might think that because the added high frequencies are totally ultrasonic they pose no threat to

sound quality and can be let out of a CD player unattenuated. But there are two very important reasons why they must be removed. First, if the ultrasonic products pass through the rest of the audio system, they can intermodulate with themselves and with the audio signal to create audible distortion. Second, "loud" (high-amplitude) ultrasonic signals can easily burn out the tweeters in the loudspeakers.

Accordingly, one of the last circuits a recorded audio signal must pass through before it appears at a CD player's output jacks is a sharp-cutoff high-frequency filter. And I do mean *sharp*. Compared with a typical well-designed infrasonic filter in an amplifier, which would have a rolloff rate of 12 to 18 dB per octave below 20 Hz, these high-cut CD output filters drop precipitously. In order to attenuate ultrasonics fully while preserving the entire audio range, the filters have rolloff rates ranging from about 60 dB to more than 100 dB per octave above 20,000 Hz. (Lexical aside: There is no single accepted term for these filters, even among engineers. They have been called "output-smoothing," "de-sampling," "reconstruction," "output-lowpass," and just plain "output" filters. The last term is the most general one and is therefore used here. *Anti-aliasing filters*, though similar in action, are different in function and are found only in digital-audio recorders, not playback units.)

Output Filter Requirements

In order to maintain the audible integrity of the recorded 16-bit digital audio signal, a signal that in theory can have an absolutely flat frequency response and a 96-dB dynamic range, a CD player's output filters must have very high performance. Among the criteria suggested in engineering papers are: (1) stopband atten-



Sampling adds ultrasonic energy, as shown in the red areas of Figure 1, top, and the difference between the red pulses and the green waveform in Figure 2(a), bottom left. Digital filters remove ultrasonics by a process of interpolation, as in Figure 2(b), right.

uation (the amount by which the ultrasonic information above 20,000 Hz is reduced) of at least 50 dB; (2) flat passband frequency response (design goals of better than ± 0.1 dB from 0 to 20,000 Hz are often mentioned); and (3) distortion and noise below that contained in a perfectly recorded 16-bit signal (implying less than 0.001 percent distortion and a dynamic range of greater than 96 dB).

The traditional method of building an electronic filter is the "analog" way. In the old days—before digital computers and even before transistors—a sharp-cutoff filter was made out of just resistors, capacitors, and inductors (coils). Loudspeaker crossovers are still made this way. More modern analog filters, like those used in many CD players, use integrated-circuit operational amplifiers in special circuit configurations to replace the bulky and expensive inductors. Analog output filters must operate on analog audio signals containing the extra ultrasonic energy, so they have to be placed just *after* the digital-to-analog converter (D/A or DAC) stage of a CD player, the section where the recorded numbers are reconverted into a continuously varying voltage.

Digital Filtering

The output-filtering requirements of a CD player *can* be met in another way, however, precisely because the audio signal is available as a series of numbers. Digital filters operate on the recorded numbers representing the audio signal; they are examples of special-purpose digital computers. A digital filter's output is a series of binary numbers with a precisely defined mathematical relationship to the numbers entering the filter's input. Since both the input and output of a digital filter are numerical, the filter must be in the circuit *before* the D/A converter.

How does a computer filter an audio signal? That's fairly easy to explain with the aid of Figure 2. The sampling of a waveform (green) produces a regular series of pulses (red) at spaces determined by the sampling period. The difference in shape between the green trace and the red trace in Figure 2(a) is the extraneous ultrasonic information depicted in red back in Figure 1 (rule of thumb: the more angular a waveform appears, the greater its high-frequency content). In an analog-filter player, the output of the DAC will look like the red trace in Figure 2(a). To oversimplify it somewhat, an analog filter removes the ultrasonic information by connecting the tips of the pulses. The filter is designed to "move" slower than the pulses so that the output waveform gets smoothed out.

A digital filter, however, operates on the numbers representing the pulses in Figure 2(a) before they are sent to the DAC. The number series is *sampled* by the digital filter circuit at a rate two or four times the original digital-audio sampling rate. You'll recall that sampling involves freezing the signal at regular intervals. But between the pulses in Figure 2(a) there is no signal to freeze. Therefore, a digital filter calculates from the original number series what the signal *should* be at those intermediate points. It removes the extraneous high-frequency information by *interpolation*, that is, by calculating and inserting additional pulses between the ones already encoded. The result, as in Figure 2(b), is a digital signal that more closely approximates the original analog signal.

But doesn't this "resampling" or "oversampling" itself add high-frequency energy? After all, the waveform is still a series of pulses, albeit more closely

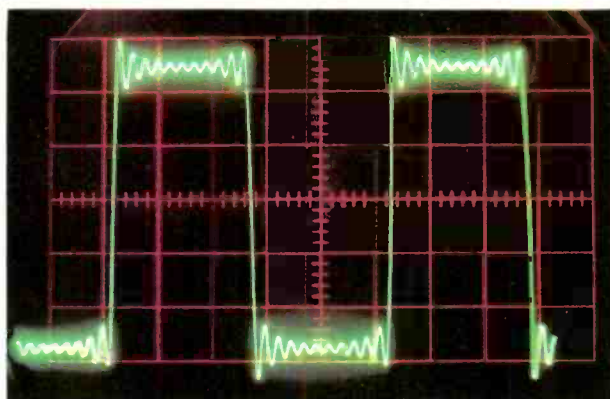
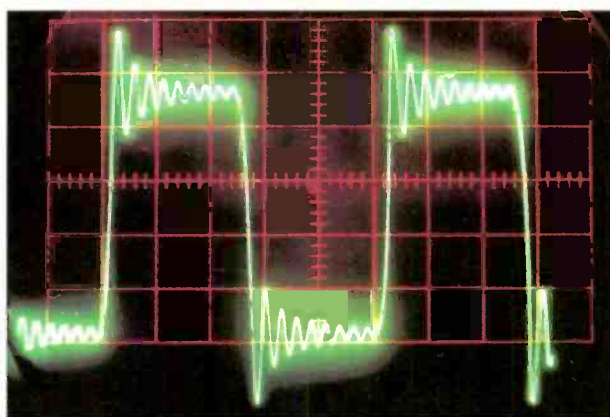
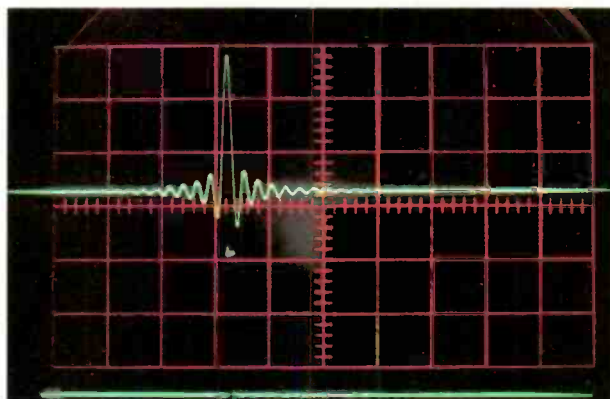
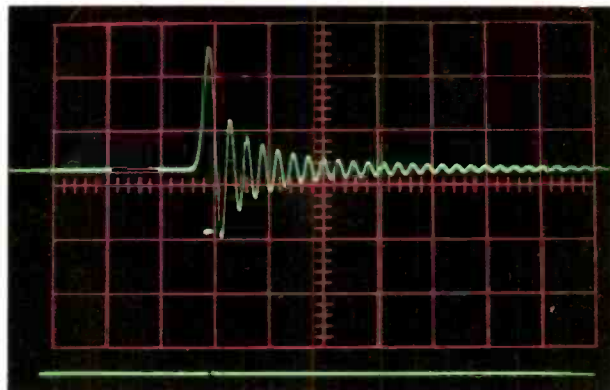


Figure 3(a), top, shows how an analog filter rings after an impulse hits it, whereas a digital filter, shown in the second photo, 3(b), rings both before and after the same impulse. The difference between the two types of filters is less noticeable with the 1-kHz square wave in the bottom two photos. The upper one, Figure 4(a), shows an analog filter; the lower one, Figure 4(b), a digital filter.

PHOTOS: BARNABY HALL

spaced ones. That's exactly right. What a digital filter does is to reduce the amount of ultrasonic information immediately above the audio band while increasing the amount of ultrasonics in other locations above the band. When a digitally filtered, resampled signal is fed to a DAC, the converter's output must *still* undergo some analog filtering. But this filtering need not have as steep a rolloff as the digital filter (or an analog-only output filter) because there is now less ultrasonic energy to filter out between 20,000 and 44,100 Hz. A simpler 18- or 36-dB-per-octave analog filter can be used in the final stage.

Analog vs. Digital

So it seems that using a digital filter still requires using an analog filter for the final output stage; two filters are required where one will actually do. What, then, are the advantages of digital filters that make them a desirable feature in a CD player? There are several important advantages, mostly stemming from the monolithic character of a digital filter, which consists of a single integrated-circuit chip, as opposed to the dozen or more interconnected parts required in an analog filter.

First of all, it's easier for manufacturers to obtain high-quality performance from a digital filter than from an analog one. Analog output filters require closely matched, high-quality, precisely assembled components to achieve a flat audio-frequency response with low distortion and noise. But a digital filter will work "perfectly" if it works at all. Its characteristics depend solely on the set of calculations it is designed to perform and the degree of numerical precision with which they are executed (the "quality" of these attributes can vary from design to design). Moreover, those characteristics will not change with time or temperature, since changing them would require altering the circuits in the semiconductor chip itself. This makes digital filters more reliable than analog ones, any of whose parts can eventually fail, taking the filter with it.

Digital filters are not a panacea, however. Because they do their calculations at very high speed, digital output filters can consume much more power than analog filters, possibly restricting their use in portable CD applications. But their primary disadvantage is that they have to be used with very fast digital-to-analog converters. Since the effective sampling rate is doubled or quadrupled by a digital filter, the DAC must operate at two or four times normal speed, which also requires more power. And since high-quality 16-bit converters are hard to make to begin with, *fast* 16-bit DAC's tend to be relatively expensive parts. On the other hand, that expense can be offset because the digital filters themselves can be made inexpensively, like most digital IC's, and they can even be incorporated within the structure of other CD-player chips. We may thus see digital filters used in even low-priced CD players because of their manufacturing advantages.

Phase Response

The most highly touted advantage of digital output filters is not their consistency, cheapness, or reliability, however, but their linear phase response, referring to the amount of time signals of different frequencies take to pass through the filter. If all audio frequencies take precisely the same time to pass through a filter, it has linear phase response.

Analog CD-player output filters are *minimum-phase* filters, meaning that they have the least amount of

phase *nonlinearity* necessary to obtain the desired steep rolloff characteristic with an analog circuit. To attenuate ultrasonic frequencies requires delaying the high audio frequencies (ultrasonics are delayed "forever," which is how they get filtered out). High audio frequencies emerge later than low-frequency signals fed to the filter at the same time. When playing back an impulse—which contains all audible frequencies in perfect phase alignment—an analog filter will "ring" as the high frequencies near 20,000 Hz come out "late." The effect is shown in Figure 3(a); The input pulse shown below the filter's output represents a one-sample-on/all-others-off signal found on CD test records.

Digital filters ring also, but they do so in an interesting way, as shown in Figure 3(b). Digital-filter impulse responses are often considered "superior" to an analog filter's response since they appear to be more like the "original" impulse. There are three problems with this interpretation. First of all, the input pulse is not a realistic digital-audio signal, being an artificial test signal generated by computer and recorded directly onto a digital CD master tape. No real-world audio signal that has to go through the analog inputs of a digital recorder will ever result in a one-sample impulse on a CD.

Secondly, the ringing from a digital audio filter is *unnatural*—it starts too early. It's as if the filter knows what's coming before it gets there—which, in effect, is exactly what is happening during the filter's calculations. You've got a choice between a "causal" analog filter that rings *after* the impulse arrives and a "non-causal" digital filter with an output that starts ringing *even before* the impulse gets there.

Finally, use of an impulse signal exaggerates the differences between the filters' waveform responses. Using a slightly more relevant computer-generated 1,000-Hz square wave, as in Figure 4, shows a greater similarity between the two filters' outputs: they both ring.

The upshot of all this is that it has yet to be conclusively demonstrated that any of the differences in high-frequency phase response between analog and digital output filters are audible, audiophile opinions notwithstanding. Carefully conducted tests reported in the *Journal of the Audio Engineering Society* show that listeners cannot detect the operation of *either* type of filter when impulses are being reproduced, even when several of the filters are connected in series! Earlier experiments showed that listeners could not detect the presence of steep-cutoff analog filters when the cutoff frequency is as high as 20,000 Hz, as in CD players. And psychoacoustic tests have long established that humans are far less sensitive to high-frequency phase shifts than to low-frequency ones. Even human hearing acuity rolls off dramatically above 15,000 Hz, making the phase response at 20,000 Hz still less important.

What *is* important, and can be audible, are the slight ripples in audio-frequency response that *both* types of filter can produce. It is to make these effects apparent that STEREO REVIEW publishes high-resolution frequency-response curves in CD-player test reports rather than impulse-response photos. Whether a player uses analog or digital filters should be less important in choosing a player than its other characteristics. But if two players have identical features and error-correction/tracking ability, you can confidently prefer the one with the digital filters, especially if it has a flatter frequency response and adequate ultrasonic attenuation. It probably won't sound better (or worse) because of the digital filters, but the digital filters should be more reliable in the long run. □

MICHAEL TILSON THOMAS

A young American conductor escapes category and redefines tradition

MY father, my grandfather, and my uncles knew the whole Gershwin family when they all lived in Brooklyn. My father, in particular, played George's music continually on the piano when I was growing up, and he played it the way he had known George to play it back in the early days. So I got used to hearing it played in a stylistically correct manner that very few people hear anymore."

Conductor-pianist Michael Tilson Thomas was talking about his newest Gershwin record release for CBS Masterworks. Performed by the Los Angeles Philharmonic, the music includes several obscure Gershwin pieces in first recordings as well as the original versions of both the *Rhapsody in Blue* and the *Second Rhapsody*, restored by Thomas himself. As we talked in his book-and score-filled New York apartment, his enthusiasm for his current recording projects was evident in his virtually nonstop comments about them.

Thomas's current—and ongoing—Gershwin recording project began almost accidentally. The initial impetus came from Thomas Z. Shepard and Andrew Kazdin, then both producers for CBS Masterworks. "Andy asked if I'd be interested in conducting the original jazz-band version of the *Rhapsody in Blue* as an accompaniment for George's own 1925 piano roll. I knew the Gershwin piano roll, although to my ears at that point it sounded fast and I was afraid there might be problems in matching it correctly. But I also knew the old acoustic recording that Gershwin made with Paul Whiteman's Or-

by Roy Hemming



WARING ABBOTT

chestra in 1924, so I was aware that Gershwin's conception was faster, and different, from the ones we've become accustomed to hearing in the concert hall and on discs.

"So we made that recording of the *Rhapsody in Blue*, and it won a lot of interesting comments," Thomas said with evident pride. Then with another CBS producer, Steven Epstein, he recorded an album of Gershwin overtures with the Buffalo Philharmonic during the third of his eight seasons as the orchestra's music director (1971-1979), and the record later became a best-seller.

"Little by little, I felt this was leading me in the direction of wanting to do something about the way Gershwin's pieces were really meant to sound—things that were in my bloodstream but that I'd previously hesitated to do. I began to approach Gershwin's pieces the way some musicians approach and seek out the original versions of works by various other composers.

"I had long taken enormous delight in the fact that whenever I played some of Gershwin's piano pieces at informal gatherings, and played them in the original style, people were fascinated," Thomas continued. "At the same time, for a young classical musician arriving on the scene as I did in the early Seventies, everyone was full of advice about what I should do and *shouldn't* do. I was told I should do plenty of Mozart and Brahms and this and that—but not Gershwin. Gershwin was considered 'pops.' Yet I felt it was a really important mission for me to undertake anyway because I was so deeply involved emotionally in the material."

About this time, Thomas played part of Gershwin's *Second Rhapsody* in a telecast of a Young People's Concert of the New York Philharmonic. "It just didn't *sound* the way I remembered it from my childhood," he recalled. "I remembered certain alternations of patterns between plucked strings and woodwinds and piano, and they weren't in the score we had. Then I discovered the piece had been edited and revised by somebody after Gershwin's death. I began a quest to find the original. Thanks to the lyricist

Ira Gershwin, George's brother, I learned that the manuscript was in the Library of Congress. My memory about the differences proved correct. I was able to make new parts and restore the piece to the way George had first written it—and that's what we've recorded.

"I think the time has come to appreciate that Gershwin's genius and vision were very, very special—that the chords had exactly a certain shape and a certain spacing because he *wanted* them that way. And the Los Angeles Philharmonic has been a joy to work with on the Gershwin



Piatagorsky used to say, "You can do so many things that people won't be able to categorize you."

recordings because they have such a great sense of style and rhythm." Could some of that come, I asked, from their also working in the nearby movie studios and having more contact with popular-music styles, old and new, than symphony musicians in some other areas? "I think many of them *have* worked in the studios over the years," Thomas answered, "but we've also worked together very carefully on these pieces over a long period."

Gershwin isn't the only composer Thomas has been seeking new approaches to, on and off records. Several seasons ago he began recording chamber-ensemble versions of the Beethoven symphonies—recordings that, to the surprise of many, have won more favorable reviews in supposedly more traditionalist Britain and Europe than in the United States.

"I've always been someone who's had to find my own path," said Thomas, who at age forty has finally begun to outgrow the *Wunderkind* label that has stuck to him since he first shot into the national spotlight in his early twenties. "My initial approach to composers such as Beethoven, Mozart, Schubert, and Brahms," he admitted, "was to perform only their lesser-known pieces. I was trying to develop a hands-on sense of musical style without falling into the inevitable traps and clichés of following famous past performances, especially the ones we know from recordings.

"But as I began to approach the Beethoven symphonies, I kept coming up with the fact that the wonderfully massive sonority of the large modern orchestra, although it can be pleasing in certain pieces, got in the way of many interesting textures present in this music. For example, the way Beethoven subtly uses winds to underscore one line at a time in a growing orchestral *tutti*, or the way in which too much string sound can obscure intricate figurations in the lower piccolo or bassoon parts. With a large orchestra, there are passages that listeners perceive only as a kind of blare of sound, without hearing all the intricate figurations that are taking place.

"I started thinking about the size of the orchestra in Beethoven's time and, above all, the size of the rooms where most concerts took place," Thomas continued. "I realized that Beethoven's symphonies were originally a kind of expanded chamber-music experience. I decided to try performing Beethoven's Sixth Symphony, the *Pastoral*, with the English Chamber Orchestra, as a kind of experiment. The results were so gratifying in terms of clarification of texture, in being able to shape and breathe life into certain phrases, that I went on to some of the other Beethoven symphonies with the same approach."

In addition to the Sixth, Thomas has now recorded the Fourth, Fifth, and Seventh Symphonies of Beethoven with the English Chamber Orchestra. The rest, he said, are "in the works." Including the Ninth, I asked? Thomas smiled. "I think

that one will be slightly expanded in relation to the others."

Are the chamber versions of the Beethoven symphonies something that work better for recordings than for live concerts in our major halls? "That depends on the hall," Thomas replied, "and the rest of the program. I've done the Sixth with a reduced orchestra in the wide expanses of Tanglewood, and it was a very successful, beautiful performance. In general, I believe that the ideal Beethoven is about twelve violins, as compared with a standard today of sixteen or eighteen. With twelve you have a mass of sound but also more possibility of delicacy and flexibility."

Since he left the Buffalo Philharmonic in 1979, Thomas has not had an orchestral home base. Instead, he has freelanced as a conductor, though between 1981 and this past spring he served as principal guest conductor of the Los Angeles Philharmonic for part of each season. Freelancing has enabled him to record different repertoires with different orchestras, which means he's been able to capitalize on what Steven Epstein, still his CBS record producer, calls the "special qualities" of different orchestras for the different cycles—the Los Angeles Philharmonic for Gershwin, the English Chamber Orchestra for Beethoven, and the Amsterdam Concertgebouw Orchestra for Charles Ives.

Why a Dutch orchestra for America's own Ives? "Because," Thomas replied without hesitation, "the Amsterdam Concertgebouw is a bona fide, internationally recognized 'Romantic' orchestra that can bring to these performances a warmth and a breadth of conception that I think is very important. Ives, after all, is the most adventurous of all the Romantic composers. But his reputation, and most people's understanding of his music, has been complicated by the perception of Ives as an avant-garde experimental composer.

"Certain aspects of Ives's activities were avant-garde or experimental," Thomas noted, "but the direction of his music was completely Romantic. He was concerned with an expansion of expression, while

retaining some of the great values of what he felt was most noble or most beautiful in America's past."

Thomas said he is particularly baffled by how little young musicians today know about Ives and the American musical traditions that Ives quotes. "It's quite unbelievable that so few of the students I have in the summer at the Los Angeles Philharmonic Institute know any of the historic tunes of William Billings or Justin Morgan, or the work songs and minstrel songs of the nineteenth century, the folk songs and popular music-hall



I think I'm an adventurous Romantic who hates dogma. I like to pursue all kinds of music.

songs, the most famous hymn tunes, the political rallying songs, or even the songs of the American musical theater of the first half of this century. It's shocking—and such a pity. It cuts people off from their own country and its history. I sometimes think there are no people on earth as culturally disenfranchised as Americans."

Despite his ultra-busy schedule as a freelancer, does Thomas miss not having an orchestra of his own? He bristled a bit at the question. "I like to think," he replied, "that for most of my professional life I've been a musical investigator. I've done performances of early music and cycles of unknown works by Beethoven, Tchaikovsky, and so on. I've done contemporary works by Steve Reich, David Del Tredici, Oliver Knussen, and others, as well as the Janáček operas and works by Stra-

vinsky and Debussy, for which I have such enormous devotion, not to mention the Gershwin and Ives we talked about. I've tried to keep all these plates in the air at once, in what looks like a complex juggling act, I suppose."

Thomas paused a second or two before continuing. "I remember Gregor Piatigorsky, the late, great cellist, warning me about this. He used to say, 'You are interested in so many things and can do so many things that it will always be confusing to people. They will never understand it. To you, it will seem completely logical why you're doing *this* or what's interesting about *that*. But others will be puzzled because they won't be able to categorize you.'

"That's true. I've been called a Romantic musician, a Neo-Romantic, an avant-garde musician, a pop musician, and an acerbic intellectual. I think I'm an adventurous Romantic who hates dogma. I like to pursue all kinds of different music. And that's exactly what I've been able to do these past few years. Many of these different strands are now coming together, especially with regard to recordings.

"That doesn't mean, however, that the time may not come when my desires to be a musical leader and investigator will team up with the forces of a great orchestra with the vision

and the courage to pursue various projects with me—and a public with sufficient curiosity to find them exciting too. That will be a very happy day."

Thomas gave a performance last year, with a major orchestra, of Beethoven's *Eroica* that ended with a simultaneous burst of boos and bravos. "That was terrific!" he said. "Someone told me that in the restaurants and bars around that particular concert complex, people stayed later than usual talking about the concert and debating it. That's what music should be." □

Roy Hemming is the producer of the New York Philharmonic's weekly national radio broadcasts. His latest book, The Melody Lingers On: The Great Songwriters & Their Movie Musicals, is due from Newmarket Press this fall.



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*Stereo Review's critics
choose the outstanding
current releases*

BRUCKNER'S SEVENTH ON COMPACT DISC

RICCARDO CHAILLY has recorded a rather bewildering variety of repertoire over the past several years, ranging from operas of Rossini, Giordano, and Massenet through orchestral music of Puccini to modern works by Prokofiev, Stravinsky, and Orff. In his new recording of the Bruckner Seventh Symphony, Chailly tackles the kind of heavy-weight, Austro-German repertoire associated with the likes of Furtwängler, Jochum, Karajan, and Haitink. To my very pleasant surprise, he not only does an absolutely convincing job of interpretation, but with the acoustic surround of the Jesus Christus Kirche in Berlin he has the benefit of exceptional recorded sound. The CD version, which I listened to for this review, should lead even the most skeptical audiophiles to recognize the virtues of the format at its best.

Right at the beginning of this most lyrical of Bruckner's symphonies, Chailly seizes the attention with a pacing of the opening twenty-one-bar melody that is exceptionally broad. Yet it holds together superbly, in one unbroken line. Throughout the movement there is none of the stop-and-go feeling that afflicts many a Bruckner symphony performance, simply a sense of inevitable flow.

The great slow movement comes off very well too, controversial cymbal crash and all. The closing elegy on the Wagner tuba is not only gorgeously played but emerges from the loudspeakers with a sonority and presence that I have not experienced even in the concert hall. The scherzo, which can be a bit pedestrian, has a welcome lift here. I only wish the finale had a bit more rhythmic tension and a more uninhibitedly exultant close, but in terms of the reading as a whole that is a relatively minor criticism.

Riccardo Chailly: an absolutely convincing interpretation

The orchestral performance as such is superb, with a marvelous glow to the string tone, double-bass sound of Stokowskian proportion, and glorious brass sonority. As always with digital recording at its best, it is the small details and the quiet sounds that gain the most. In this case the famous Bruckner

pauses emerge as palpable silences indeed, integral parts of the total musical fabric. On the CD there's not a trace of surface noise or background hiss to spoil the effect of this remarkable realization. *David Hall*

BRUCKNER: *Symphony No. 7, in E Major*. Berlin Radio Symphony Orchestra, Riccardo Chailly cond. LONDON ● 414 290-1 \$10.98, © 414 290-4 \$10.98, © 414 290-2 no list price.

GUS HARDIN HITS HER STRIDE ON "WALL OF TEARS"

GUS HARDIN, the woman with the man's name and the voice of not-quite-so-enviable experience, has been a "promising" singer ever since she signed with RCA in 1983. It has not been an easy two years. There were records that looked as if she were finally going to bear out our expectations, only to be followed by others that fell short.

With the eight songs on her new

LP, "Wall of Tears," however, Hardin has hit her stride, and the success can probably be attributed to producer Mark Wright as much as to Hardin. I wish Wright had mixed the singer's sandpaper-and-gravel voice a little more to the front on the majority of the songs, but Wright has been the first of Hardin's producers to understand that her "tough girl" image (at thirty-nine she has had six husbands) is no PR invention—and, more important, that she projects that image out of a fierce desperation to connect with someone. The songs, then, do not portray Hardin as a little-girl victim (that favorite theme of female country-music singers) but as a full-grown, risk-taking woman.

Certainly the strongest of them is

MIKE EVANS/LONDON RECORDS



BEST OF THE MONTH



RCA RECORDS

Hardin: powerful, compelling

My Mind Is on You, a Dave Loggins/Don Schlitz song about an angry lover thinking things over in a bar, which contains some of the most powerful lyrics in contemporary country music. *I'm Dancing As Fast As I Can* packs a subtle, emotional

wallop that is equally rare. More expected, but no less compelling, is a meaty duet with Earl Thomas Conley, *All Tangled Up in Love*, and a full-tilt cooker, *More or Less*. Hardin performs them all with exhaustive verve and emotion, backed by a smart ensemble of guitar, keyboards, percussion, and bass.

The idea of putting only eight songs on this LP and reducing the price was born from the recognition that Hardin's last album didn't exactly burn up the sales charts, but this one ought to turn things around. Here's hoping that next time Hardin makes a record, RCA will give us a double album to make up the difference. *Alanna Nash*

GUS HARDIN: *Wall of Tears*. Gus Hardin (vocals); vocal and instrumental accompaniment. *All Tangled Up in Love*; *What We Gonna Do*; *What About When It Rains*; *My Mind Is on You*; *Drowning in Memories*; *Wall of Tears*; *I'm Dancing As Fast As I Can*; *More or Less*. RCA CPL1-5358 \$5.98, © CPK1-5358 \$5.98.

PERFECT CASTING FOR RAVEL'S COMPLETE SONGS

ANGEL'S new recording of the complete songs of Maurice Ravel, on three LP's or cassettes, is so perfectly cast with a half-dozen really outstanding singers that it must rank as one of the most successful undertakings of its kind. The singers identify with their respective assignments so completely that you'd be hard pressed to think of a substitute for any one of them.

The set is really complete, too, including two or three songs that apparently have not been recorded at all until now. One of these is *Tripatos*, a Greek folk-song setting that immediately follows the familiar *Cinq mélodies populaires grecques*. All six songs are sung exquisitely by Mady Mesplé, as are three more of the least-known songs. Dalton Baldwin, incomparable in this repertoire, is her piano accompanist, and he

fills that role for the other singers as well in everything but *Shéhérazade*. Teresa Berganza sings that cycle accompanied by the Orchestre du Capitole de Toulouse under Michel Plasson. The orchestra does well, and Berganza brings a remarkable freshness to the music. She delivers the three songs with great clarity and awareness of the meaning of the words, letting the voluptuousness arise unforced out of the music.

If Berganza is a surprising (but very happy) choice for *Shéhérazade*, she was the natural one for the Spanish pieces, *Vocalise en forme de habanera* and *Chanson espagnole*, and her stunning way with them may well draw the listener back more than anything else in the set. Just as appropriately, the *Chanson française* goes to Gabriel Bacquier and the *Chanson écossaise* to the British soprano Felicity Lott. Bacquier also seems to have had a very good time with the *Histoires naturelles*. José van Dam's weightier voice is especially well suited to the *Deux mélodies hébraïques* and the *Don Quichotte* cycle. He is the most generously represented of the six singers in the collection, and he

distinguishes himself throughout.

If a single performance had to be chosen as the most beautiful of all, I think it would be that of the *Trois poèmes* set to texts by Mallarmé, in which Lott and Baldwin are joined by a chamber group from the Orchestre de Paris. If I had to select the most impassioned performance, it would be Jessye Norman's *Chansons madécasses* (with flutist Michel Debost, cellist Renaud Fontanarosa, and Baldwin). Norman seems to have made the Madagascan Songs pretty much her own; she recorded them with Boulez not too long ago on CBS, but I would choose the Angel remake simply because it is part of this truly complete and truly wonderful collection.

The recording itself is nothing short of magnificent. Each of the six voices is given the most flattering focus, the balance between voice and instrument(s) is at all times ideal, and the German DMM pressings are sheer perfection. The documentation, happily, is on the same high level as the musical and engineering contributions. In addition to full texts, with excellent translations, the sixteen-page booklet includes a valuable essay by Jean-Michel Nectoux and a really marvelous assortment of illustrations. In the realm of recorded song, French or otherwise, this release is not likely to be outshone anytime soon. *Richard Freed*

RAVEL: *The Complete Songs*. Felicity Lott, Mady Mesplé, Jessye Norman (sopranos); Teresa Berganza (mezzo-soprano); José van Dam, Gabriel Bacquier (baritones); Dalton Baldwin (piano); other musicians; Orchestre du Capitole de Toulouse, Michel Plasson cond. (in *Shéhérazade*). ANGEL ● DSCX-3965 three discs \$36.98, © 4D3X-3965 three cassettes \$36.98.

Lott: most beautiful of all



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The Smiths: (from left) Mike Joyce, Morrissey, Johnny Marr, Andy Rourke

THE SMITHS: "MEAT IS MURDER"

LISTENING to the Smiths' new "Meat Is Murder," I didn't know whether to laugh or cry. The second album from this singular English group is a brilliantly funny and tragic study of brutality—the violent shocks that either cow you into helpless passivity or harden you into unfeeling isolation. It's more like a collection of absorbing poems or stories than a rock album.

In *The Headmaster Ritual*, lead vocalist Morrissey sings of being thwacked on the knees, kneed in the groin, kicked in the showers, and otherwise abused by the headmaster until he has "bruises bigger than dinner plates." Morrissey's understandable response is, "Give up education as a bad mistake." In *Rusholme Ruffians*, while a young boy is stabbed and robbed on the last night of a fair Morrissey watches a girl on a Ferris wheel as "her skirt ascends for a watching eye." His conclusion: "Someone falls in love/ and someone's beaten up/and the senses being dulled are mine/and though I walk home alone/my faith in love is still devout."

In *What She Said*, a miserably unhappy girl wonders why someone hasn't noticed she's dead and buried her. As the songwriter observes,

"What she said was sad/but then, all the rejection she's had/to pretend to be happy/could only be idiocy." The singer of *Nowhere Fast* puzzles us with the paradoxical observation, "If the day came when I felt a/natural emotion/I'd get such a shock I'd probably jump/in the ocean/and when a train goes by/it's such a sad sound."

The music this quartet produces is lean and crude. The tunes range from jaunty rockabilly to moody, dirge-like chants. Three-chord rhythm guitar, acoustic and electric, predominates. Yet the Smiths' extremely limited technical range is the perfect medium for Morrissey—dark, edgy, even frightening. Morrissey himself is a unique stylist. Barely able to carry a tune, he nonetheless skips off the beat in surprising, twisting phrases, more spoken than sung. It's something like a poetry reading, although Morrissey is apt to break into a yodel or trill without notice. Hardly competent, absurd really, and totally ingratiating, "Meat Is Murder" could be the most intelligent record of 1985.

Mark Peel

THE SMITHS: *Meat Is Murder*. Morrissey (vocals); Johnny Marr (guitar, piano, harmonica); Andy Rourke (bass guitar); Mike Joyce (drums). *The Headmaster Ritual*; *Rusholme Ruffians*; *I Want the One I Can't Have*; *What She Said*; *That Joke Isn't Funny Anymore*; *How Soon Is Now?*; *Nowhere Fast*; *Barbarism Begins at Home*; *Meat Is Murder*. SIRE 25269-1 \$8.98, © 25269-4 \$8.98.

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- **ON YOUR TOES (Rodgers and Hart).** Broadway-revival cast. POLYDOR 813 667-2. "A melodic feast" (November 1983).
- **TEDDY PENDERGRASS: *Love Language*.** ASYLUM 60317-2. "Skillfully rendered" (December 1984).
- **SHALAMAR: *Heart Break*.** SOLAR/WEA 2-60385. "Their best" (May 1985).
- **STEPHEN STILLS: *Right By You*.** ATLANTIC 80177-2. "Hopeful romanticism" (March 1985).
- **GROVER WASHINGTON, JR.: *The Best Is Yet to Come*.** ELEKTRA 60215-2. "Delightful" (May 1983).
- **THE WHO: *Quadrophenia*.** MCA MCAD2-6895. "Fine, involving, manageably pretentious" (February 1974).

CLASSICAL

- **IVES: *Songs*.** Alexander. ETCETERA KTC-1020. "Completely convincing" (March 1985).
- **RACHMANINOFF: *Piano Concerto No. 2; Paganini Rhapsody*.** CBS MYK 36722. "A winner" (March 1965).
- **STRAVINSKY: *Le Sacre du printemps*.** Muti. ANGEL CDC-47102. "Impressive" (August 1980).
- **TCHAIKOVSKY: *Symphony No. 6*.** Maazel. CBS MK 37834. "Cool but revealing" (January 1984).
- **VIVALDI: *The Four Seasons*.** Galway. RCA RCD1-2284. "Brilliant" (November 1977).
- **WAGNER: *Das Rheingold*.** Karajan. DG 415 141-2 GH3. "Thoughtful" (October 1968).
- **WAGNER: *Die Walküre*.** Karajan. DG 415 145-2 GH4. "Challenging but valid" (June 1967).
- **WAGNER: *Siegfried*.** Karajan. DG 415 150-2 GH4. "Illuminating, controlled" (October 1969).
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JOAN ARMATRADING: *Secret Secrets*. Joan Armatrading (vocals); other musicians. *Persona Grata; Temptation; Moves; Talking to the Wall; Love by You;* and five others. A&M SP 5040 \$8.98. © CS 5040 \$8.98.

Performance: *Assertive*
Recording: *Very good*

Joan Armatrading has always been a fascinating anomaly: a black woman of Caribbean background who grew up in Britain singing and playing music that defies categorization. In recent years she has moved closer to the heart of British rock in the textures she employs on her records, and this new album confirms that trend. Yet she remains sufficiently individual in her approach to deserve some attention even from those who do not normally favor that sort of music.

Although Armatrading usually plays electric guitar in performance, she concentrates here on vocals, belting out her lyrics in a lusty, assertive contralto. The mood is sustained by the instrumental arrangements, which seem denser than usual and include some imaginative special effects. At times the mood softens, and she offers introspective song-stories like *Strange* and *Love by You*. Her songs won't please everybody, and some of them might even seem grating. But she won't bore you. *P.G.*

PHIL COLLINS: *No Jacket Required*. Phil Collins (vocals, synthesizer, drums); Daryl Steurnier (guitar); David Frank (synthesizer); vocal and instrumental accompaniment. *Sussudio; Only You Know and I Know; I Don't Wanna Know; One More Night; Don't Lose My Number;* and five others. ATLANTIC 81240-1 \$8.98, © 81240-4 \$8.98.

Performance: *Stale*
Recording: *Good*

Phil Collins's new album is a disappointment, a pale imitation of his earlier "Hello, I Must Be Going," with its

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mixture of up-tempo, quasi-funk numbers and ballads and the occasional brass arrangements of the Phoenix horns. What "No Jacket Required" suggests more than anything is that Collins needs to get off this white-boy-plays-rhythm-and-blues kick. It was a nice change of pace from his work with Genesis, but although he may have convinced himself otherwise, Collins is not really cut out for this stuff. He sounds brittle and, well, wimpy. Worse, his songs need a fresh focus: *Only You Know and I Know, Don't Lose My Number, I Don't Wanna Know,* and *One More Night* are apt titles for these pointless variations on overworked themes. Do we really need another cranked-up number about some woman "who doesn't know my name, but I love her just the same"? The answer is no. *Sussudio's* been done a thousand times, and a thousand times better. This isn't a terrible record, just a stale one. Collins can do better. *M.P.*

FOREIGNER: *Agent Provocateur*. Foreigner (vocals and instrumentals). *Tooth and Nail; That Was Yesterday; I Want to Know What Love Is; Stranger in My Own House; She's Too Tough;* and five others. ATLANTIC 81999-1 \$8.98. © 81999-4 \$8.98.

Performance: *Unchanged*
Recording: *Good*

Four years between Foreigner albums and, judging from "Agent Provocateur," you'd think absolutely nothing had happened in rock music in the interim. This band must infuriate every group struggling to create a distinctive sound. It was so easy for Foreigner. They started out imitating Free, and before you knew it Lou Gramm's archetypal AOR vocals and Mick Jones's heavy-handed guitar had consigned Rodgers and Kossoff to the rock-and-roll attic.

"Agent" could almost be side two of Foreigner's 1981 hit album, "4," though it lacks anything to rival that record's classic *Urgent*. "Agent" does have some rewards for anyone who's missed Foreigner's "tasteful" approach to heavy-metal. I have two favorites here: *Stranger in My Own House*, in which the singer stumbles home at 3 a.m. to find his bedroom door locked, a "Do Not Disturb" sign hanging on the doorknob, and his sheets and pillow in a pile on the floor; and *She's Too Tough*, which is about what you'd expect it to be about. "Agent Provocateur" suggests that Foreigner is as simple and predictable as ever—and just as unmistakable. *M.P.*

AMY GRANT: *Straight Ahead*. Amy Grant (vocals); vocal and instrumental accompaniment. *Where Do You Hide Your Heart; Angels; Straight Ahead; The Now and the Not Yet; Jehovah;* and

five others. A&M SP-5058 \$8.98. © CS-5058 \$8.98.

Performance: *Heavenly*
Recording: *Excellent*

Amy Grant is a big name on the contemporary Gospel-music circuit and has been for quite some time now. The pity is that most "secular" audiences don't know her work. Just as you don't have to be a feminist to appreciate a lot of so-called "women's music," you don't have to be a Jesus freak to get into what Grant does.

Some of what she does here, such as *Jehovah*, is pretty forthright about the Christian message, but other songs, such as *Where Do You Hide Your Heart*, a sophisticated pop song with jazz overtones, only brings Jesus in near the middle as a solution to a problem. In other words, the not-so-pious listener won't feel clobbered over the head by most of this. If you don't listen closely, you might not even know this is, ahem, "religious music." Grant is a lovely singer with a full, rich voice and a joyous, soaring delivery, and she is backed here by musicians of the first order. A most enjoyable album. *A.N.*

GUS HARDIN: *Wall of Tears* (see Best of the Month, page 57)

MICK JAGGER: *She's the Boss*. Mick Jagger (vocals, harmonica); Jeff Beck, Pete Townshend, Nile Rodgers (guitar); other musicians. *Lonely at the Top; 1/2 a Loaf; Running Out of Luck; Turn the Girl Loose; Hard Woman; Just Another Night;* and three others. COLUMBIA FC 39940, © FCT 39940, no list price.

Performance: *Uninvolving*
Recording: *Very good*

During the height of the punk explosion, we used to hear a lot of yammering about whether certain Sixties pop stars (the Rolling Stones, for instance) were relevant any more. Listening to this first solo effort by Rolling Stone Mick Jagger, we're forced to amend the question. What we should be asking is not whether Mick is relevant these days, but if he's even interesting.

On the evidence offered by "She's the Boss," the answer seems an unavoidable "Not particularly." Oh, the thing *sounds* like a million bucks, a state-of-the-art contemporary dance record with an all-star cast that, for once, is used for musical rather than name value (Jeff Beck, for example, contributes some particularly well-conceived guitar lines). But at bottom, in Mick's songs, there's really not much going on.

Mick's stance here is apparently supposed to suggest a new vulnerability, a recognition (tongue in cheek?) of his own sexism. But he sings nearly everything with such mannered, ironic detachment that it's impossible to tell

whether he's sincere or not, and even harder to care. And since he hasn't bothered to come up with much in the way of what we once quaintly referred to as melodies, either, the end product is a gigantic star trip that's pretty difficult to warm up to. Notable exceptions: *Lonely at the Top*, which works up a fairly convincing Stones-ish swagger, and the title tune, a moderately amusing look at role reversal that might be Mick's apology—after all these years—for the Stones' *Under My Thumb*. Otherwise, it's tough sledding. S.S.

GLADYS KNIGHT AND THE PIPS: *Life*. Gladys Knight and the Pips (vocals); instrumental accompaniment. *Strivin'*; *Keep Givin' Me Love*; *Just Let Me Love You*; *Life*; *Till I See You Again*; *Straight Up*; *Glitter*; and three others. COLUMBIA FC 39423, © FCT 39423, no list price.

Performance: *Best in recent years*
Recording: *Excellent*

When they are in peak form, Gladys Knight and the Pips are so superior to other popular singing groups that they should be engaged to give master classes in soul. Some of their recent albums have deferred to trendy commercialism, but their newest release is cause for celebration. "Life" is their best CBS album to date. On it they sing with the emotional depth and consummate artistry of their old Motown days—they might even be somewhat better, having mellowed with time.

Part of the reason for the improvement this album represents may be that this time the group took a strong role in writing, arranging, and producing much of the material. There's only one clinker, a raucous mess called *Do You Wanna Have Fun*. Everything else is just fine. I especially like *Till I See You Again* and *Straight Up*, which Knight sings with such passionate intensity that it brings tears to the eyes. The Pips perfectly complement her with a lush vocal blend and tingling choir-like effects. The result is an album that is bound to be welcome on any turntable. P.G.

LITTLE RIVER BAND: *Playing to Win*. Little River Band (vocals and instrumentals). *Playing to Win*; *Reappear*; *Blind Eyes*; *When Cathedrals Were White*; *Piece of the Dream*; and five others. CAPITOL SJ-12365 \$8.98, © 4XJ-12365 \$8.98.

Performance: *Drastic changes*
Recording: *Very good*

Anyone who remembers Australia's Little River Band for its early country-rock-flavored material or its pop MOR ballads of the Eighties will be fairly flabbergasted at this new album. In the last LRB album, "The Net," the group relaxed its MOR stance to move into



SUMMER HEAT

ONE record I want playing when I head out for the beach this summer is David Lee Roth's "Crazy from the Heat." Although none of the songs on this album were written by him, what Roth has put together is far more interesting than any of Van Halen's records. The four well-recorded tracks (five songs, actually) on the EP range over forty years of pop, but all of them speak directly to this outrageous, fun-loving singer's public image and private sense of self.

California Girls is a natural for the man who is rewriting the book on backstage frolics. Carl Wilson and Christopher Cross, on background vocals, play straight men to Roth's raunchy, growling appreciation, "I dig those girls." No less apropos, although genuinely surprising for a heavy-metal entertainer, is Roth's tophat-and-tails medley of the Louis Prima theme, *Just a Gigolo*, with *I Ain't Got Nobody*. Roth is almost typecast as a gigolo, but he's far too intelligent to miss the irony in lines like, "There will come a day when youth will pass away/ . . . and life will go on without me." And you don't need to be a Freudian psychoanalyst to understand the commentary on life as a supercharged, supersexed star in *I Ain't Got*

Nobody. Roth's scat singing and general mugging on this number remind me of Satchmo. The rhythm section, led by bassist Willie Weeks, is a killer.

In the strutting *Easy Street*, the cocksure Roth is a man who can have anything or anyone he points to as he lords it over the roiling percussion of Sammy Figueroa, Edgar Winter's steamy sax, and the itchy guitar licks of Eddie Martinez. The sleeper here, though, is *Coconut Grove*. The mood is sundown after a day on the sand, the warm breeze sending a shiver up your spine. On it Roth sounds uncannily like John Sebastian—not exactly the pinnacle of machismo.

When a rock star has made it as big as David Lee Roth has, a solo album is inevitable. Would that they were all this good. "Crazy from the Heat" treats us to the sound of one of the richest, randiest figures in rock, at the height of his fame, doing what he does best—enjoying himself.

Mark Peel

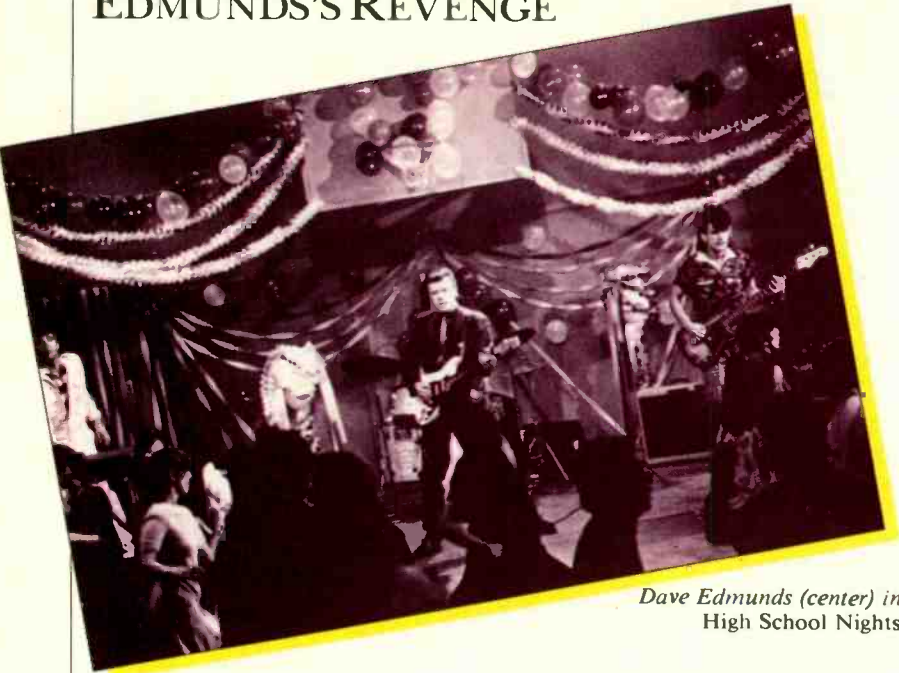
DAVID LEE ROTH: *Crazy from the Heat*. David Lee Roth (vocals); vocal and instrumental accompaniment. *Easy Street*; *Just a Gigolo/I Ain't Got Nobody*; *California Girls*; *Coconut Grove*. WARNER BROS. 25222-1 \$5.99, © 25222-4 \$5.99.

funkier territory, but since that didn't seem to work, it has now adopted an even harder edge.

Some of "Playing to Win" sounds like Pink Floyd on a lazy day, and some sounds like . . . well, like a hundred oth-

er hard-rock bands trying to be a little mysterious and opaque. Imitation—as well as instrumental competency and tight vocal harmonies—has always been the Little River Band's long suit, however, so perhaps we shouldn't be

EDMUNDS'S REVENGE



Dave Edmunds (center) in
High School Nights

As a movie, *Porky's Revenge* is basically just another of those teenage gross-out comedies that have in recent years become a genre unto themselves (in the manner of Sixties beach musicals or Seventies slasher-kills-babysitter epics), and even on its own dopey terms, it's pretty rancid stuff. The soundtrack album, however, is something out of the ordinary and altogether delightful.

Producer Dave Edmunds, noting that the film takes place in a vague late-Fifties, early-Sixties limbo, had the nifty idea to take authentic period songs and do them with contemporary artists in styles ranging from ultra-purist faithful to cheerily updated. Thus, for example, we get Jeff Beck doing the venerable Santo and Johnny hit *Sleepwalk*, at one time the end-of-the-night closing tune for every rock band in the world, more or less note for note like the original, and later on we hear Willie Nelson doing *Love Me Tender* in the manner of his "Stardust" album re-creations of pop standards.

All is not Golden Oldies here, to be sure. Edmunds himself weighs in with three cute new songs that maintain an appropriately greasy jukebox tone while clearly being the work of somebody living in 1985, and George Harrison

makes what can only be called a minor artistic comeback with an energetic, extremely affecting version of a heretofore unrecorded Bob Dylan song.

Still, the soul of the album lies in its period pieces, and they're uniformly fab, from Clarence Clemons's snarling, metallic rundown of the *Peter Gunn* theme to Robert Plant's breathless encounter with the obscure Charlie Rich rocker *Philadelphia Baby* to the quite remarkable remake of *Blue Suede Shoes* by none other than composer Carl Perkins and two members of the Stray Cats (talk about bringing it all back home). "Porky's Revenge" may not be a major work of art—frankly, it's a party record that knows its place—but I think it's safe to say that it's one of the best soundtrack albums ever to come out of a thoroughly awful film. *Steve Simels*

PORKY'S REVENGE. Original-soundtrack recording. Dave Edmunds: *High School Nights*; *Do You Want to Dance*; *Queen of the Hop*; *Porky's Revenge*. Jeff Beck: *Sleepwalk*. George Harrison: *I Don't Want to Do It*. The Fabulous Thunderbirds: *Stagger Lee*. Carl Perkins: *Blue Suede Shoes*. Clarence Clemons: *Peter Gunn Theme*. Willie Nelson: *Love Me Tender*. The Crawling King Snakes with Robert Plant: *Philadelphia Baby*. COLUMBIA JS 39983, © JST 39983, no list price.

Me Blind; and four others. COLUMBIA BFC 39956, © BFT 39956, no list price.

Performance: *Appealing*
Recording: *Nice*

Alison Moyet, who previously kicked up some dust with a techno-pop outfit known variously as Yaz or Yazoo, is a marvelously soulful young singer in the

great British tradition that began with Dusty Springfield. Like Springfield, she's got a dusky, late-night alto voice that somehow seems familiar without recalling anybody in particular. She phrases a bit like a classic blues singer, though I can't tell you which one.

In any event, "Alf," her debut solo album, is a little stunner, one of the few genuinely human-sounding offshoots of the current English obsession with American r-&-b. For once the singer is not buried under a synthesized wall of sludge; for once we get real, insinuating tunes; and for once we get the true Sixties Meet the Eighties dance-pop synthesis that everybody from Wham! to Southside Johnny has been trying for with much less success. "Alf" is a very appealing record, and I suspect that Alison Moyet is going to be around for a while. S.S.

THE SMITHS: *Meat Is Murder* (see Best of the Month, page 60)

GEORGE STRAIT: *Does Fort Worth Ever Cross Your Mind*. George Strait (vocals); vocal and instrumental accompaniment. *Any Old Time*; *I Need Someone Like Me*; *Honky Tonk Saturday Night*; *Love Comes from the Other Side of Town*; and six others. MCA MCA-5518 \$7.98, © MCAC-5518 \$7.98.

Performance: *A for effort*
Recording: *Exceptional*

Boy, oh boy, could this have been a great record! For his countryest of albums, the talented George Strait, a former cattle rancher (and thus an honest-to-goodness singing cowboy), went on a round of Nashville music publishers, handpicking what he thought were the ten best contemporary country and nouveau-Western swing songs available. Then Jimmy Bowen corralled the top Nashville session cats (Weldon Myrick on steel, Reggie Young on electric guitar, Johnny Gimble on fiddle) for a lively, uncluttered production. All that should have made for one heck of an album.

The problem? Well, the singing is fine. Strait, who is lean and handsome in the Tommy Trueheart mold, wants to be a bona fide successor to the honky-tonk throne of Hank Williams, George Jones, and Merle Haggard, and he manages to sound like each one of them—even throwing in a little Jerry Lee Lewis—without giving up much of his own identity. Trouble is, there are only two memorable songs in the lot, the title song and an odd little honker called *The Fireman* (about a romeo who rides all over town "puttin' out old flames").

Of course, it took even Hank Williams a while to become a legend. But he had songs, man, he had songs. A.N.

TIL TUESDAY: *Voices Carry*. Aimee Mann (vocals, bass); Michael Hausman (drums, percussion); Robert Holmes (guitars, vocals); Joey Pesce (synthesizers, piano, vocals). *Love in a Vacuum*;

too surprised. And it's not that there's anything *wrong* with the album—in fact, much of it is pretty arresting, if not arousing. It's just that I got the feeling I'd heard it all before. A.N.

ALISON MOYET: *Alf*. Alison Moyet (vocals); vocal and instrumental accompaniment. *Love Resurrection*; *Honey for the Bees*; *For You Only*; *Invisible*; *Steal*

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Looking Over My Shoulder; I Could Get Used to This; No More Crying; Voices Carry; Don't Watch Me Bleed; and four others. EPIC BFE 39458, © BFT 39458, no list price.

Performance: *Lightweight*
Recording: *Crisp*

Boston-based 'Til Tuesday's album debut begins promisingly enough with the New Wave Mamas-and-the-Papas sound of *Love in a Vacuum*. (There's only one woman in 'Til Tuesday, however—the striking redhead in the cover photo is *Robert Holmes*.) But I'm afraid the rest is downhill. The group's sound, look, and attitude have been carefully groomed. "Voices Carry" benefits from sterling sound quality, the band is beautiful to look at, and the lyrics, which deal exclusively with the failures, battles, and deceptions of love, are pretty good. But they forgot to show up with any good music.

"Voices" ambles self-consciously along through a series of slow-moving arrangements that are clearly trying to achieve seriousness and drama but are merely drab. Aimee Mann, the band's focal point, seems to get flatter and thinner with each cut. Guitarist Holmes is quite good, his clean ornamentation providing the music with what little interest it has. But there's not really enough of him to make much differ-

ence. The rhythm section is dull. If they had been able to create any tension for Holmes and Mann to have worked against, some of these songs might not have been dead on arrival. *M.P.*

CONWAY TWITTY: *Don't Call Him a Cowboy*. Conway Twitty (vocals); vocal and instrumental accompaniment. *Don't Call Him a Cowboy; Somebody Lied; Between Her Blue Eyes and Jeans; Everyone Has Someone They Can't Forget;* and six others. WARNER BROS. 25207-1 \$8.98, © 25207-4 \$8.98.

Performance: *Cream of country*
Recording: *Very good*

I have never been what you'd call a dyed-in-the-wool Conway Twitty fan, but I have a lot of admiration for the way he sells a song and for the way he's guided his nearly thirty-year career. In "Don't Call Him a Cowboy" he's moved away from those horrible Nashville song books (tunes with titles like *If You Want Your Beer to Get Really, Really Cold, Put It Next to My Ex-Wife's Heart*) and concentrated on delivering strong, well-crafted country and country-blues tunes that should appeal to fans of any good music, not just country.

There is one unabashedly commercial song here, the title cut, but it is a clever and jaunty little number that starts

things off just fine. As usual, Twitty doesn't just sing a song, he wrings every nuance out of it, but with almost no exception the material here measures up to the vocal. A very strong, solid effort. *A.N.*

UTOPIA: *POV*. Utopia (vocals and instrumentals). *Play This Game; Zen Machine; Style; Mated; More Light; Stand for Something;* and four others. PASSPORT PB 6044 \$8.98, © PBC 6044 \$8.98.

Performance: *Okay*
Recording: *Excellent*

Utopia—that is, Todd Rundgren and friends—weighs in here with a new album that's rather a mishmash: a little Philadelphia r-&-b cheek by jowl with a little techno-pop, then a little crunching hard rock hearkening back to Todd's days with the Nazz. It's all impeccably crafted, which is probably the least one can expect from a group whose head honcho also happens to be one of the Western World's most gifted record producers, but it's also a little empty-headed. When Rundgren isn't waxing endearingly sappy about unrequited love, he rarely has much else of interest to say. (Breathes there, after all, a man with soul so dead he doesn't swoon on hearing Todd's wimp-rock classic, *Can We Still Be Friends?*) In "POV," unfor-

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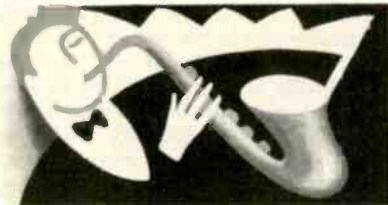
tunately, he waxes sappy far too infrequently for anyone's good. S.S.

LUTHER VANDROSS: *The Night I Fell in Love*. Luther Vandross (vocals); other musicians. *'Til My Baby Comes Home; The Night I Fell in Love; If Only for One Night; Creepin'; Other Side of the World; Wait for Love*; and two others. EPIC FE 39882, © FET 39882, no list price.

Performance: *Smooth but familiar*
Recording: *Very good*

Luther Vandross is a gifted singer, with a velvety and supple voice, but I've been far less impressed by his songwriting ability. Too many of his creations sound alike. Most of the time, though, his albums are so skillfully produced that the songs themselves don't seem to matter all that much; they all at least sound good. And usually each album includes one ballad sung so superbly that it can make the whole set worthwhile. Generally there's also one r-&-b classic given a fresh treatment and superbly sung as well. It's no different this time around. The classic is Stevie Wonder's *Creepin'*, and the ballad is *Wait for Love*, which is almost pretty. The other originals seem a bit worn; we've heard them before under other titles. It's time for Vandross to break out of this mold. P.G.

JAZZ



KENNY BURRELL AND GROVER WASHINGTON, JR.: *Togethering*. Kenny Burrell (guitar); Grover Washington, Jr. (saxophone); Ron Carter (bass); Jack de Johnette (drums); Ralph MacDonald (percussion). *Soulero; Sails of Your Soul; Day Dream; Beautiful Friendship; Togethering*; and three others. BLUE NOTE BT 85106 \$7.98, © BTC 85106 \$7.98.

Performance: *Together*
Recording: *Excellent*

Since saxophonist Grover Washington, Jr., is well known for a multitude of albums that range from heavily arranged mood jazz to commercial pop, his appearance here with the venerable jazz guitarist Kenny Burrell comes as something of a surprise. But it is perhaps the best thing that has happened to Washington for years. He is stripped of

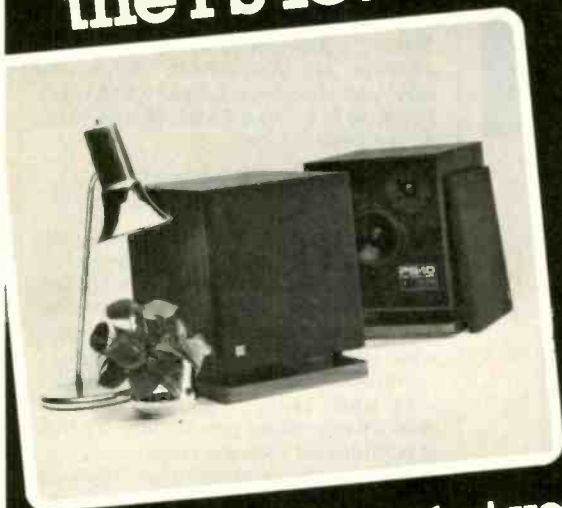
all artifice in an excellent, straight-ahead album with one of the most tasteful and continuously gratifying of guitarists. Washington favors a smooth, almost politely subdued horn sound that is an ideal companion for Burrell's nuanced guitar work. The selections range from a Brazilian-flavor to vintage Strayhorn-Ellington. It looks as if the newly revived Blue Note jazz label will be true to its heritage after all. P.G.

BILL CHALLIS AND HIS ORCHESTRA: 1936. *Life Is a Song; Paris in the Spring; Rockin' Chair; Clarinet Marmalade; Temptation; New Orleans; Sidewalks of Cuba; Let Yourself Go*; and six others. **More 1936. *Great Day; Diga Diga Do; Let's Face the Music and Dance; In the Still of the Night; Riverboat Shuffle; Rhythm in My Nursery Rhymes*; and six others. CIRCLE ③ CLP-71 and CLP-72 two discs \$7.98 each (from Circle Records, 3008 Wadsworth Mill Pl., Atlanta, GA 30032-5899).**

Performances: *Masterly*
Recordings: *Fine mono transfers*

Bill Challis, now eighty-one, was one of the most advanced jazz-influenced orchestra arrangers from the late Twenties through the late Forties. He wrote for Paul Whiteman, Duke Ellington, the Dorseys, Fletcher Henderson, and Glenn Miller. A close friend of Bix Bei-

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derbecke, Challis notated Bix's piano pieces in 1929, and in 1975 he scored them for five guitars (on Monument/Evergreen MES 7066).

In February 1936 Challis assembled an orchestra for twenty-four sides recorded in exquisitely detailed sound for World Transcriptions radio syndication, using many of New York's top talents (among them Artie Shaw, trumpeter Manny Klein, trombonist Jack Jeny, and vocalist Bea Wain). These have now been issued on disc for the first time on George H. Buck, Jr.'s Circle Records label.

Challis wrote with a mixture of classical references, whimsicality, and jazz feeling that made musicians play more than just the notes, as these delightful and historically important albums testify. He revived some of his Twenties arrangements for these dates, but he also scored a scoop with three Irving Berlin melodies from the 1936 film *Follow the Fleet* that he recorded before anyone else. Challis has long been in jazz history books as an innovator, but these recordings are welcome new proof of his merit, and they belong in every collector's library. *Joel Vance*

RED GARLAND: *So Long Blues*. Red Garland (piano); Ron Carter (bass); Ben Riley (drums); other musicians. *Gee Baby, Ain't I Good to You; In a Mellow-tone; The Best Man; So Long Blues*; and two others. GALAXY GXY-5149 \$8.98.

Performance: *Steeped in blues*
Recording: *Good*

The legacy of pianist Red Garland, who died last year, was laced with his deep affinity for the blues, which might be considered a natural offshoot of his Texas roots. Although Garland rose to prominence while he was playing with Miles Davis during the Sixties, he made some impressive recordings as a leader, highlighted by "Red in Bluesville" (Prestige 7157), which is representative of the style he established early on and held to for years.

On "So Long Blues," recorded in 1979 and just now released, that style is immediately recognizable from the assertive opening block chords of *Gee Baby, Ain't I Good to You* and from his cool sense of phrasing. Here Garland is presented in an assortment of settings, from trio to quartet and quintet, with Ron Carter, the thinking man's bassist, present on all six selections. Highlights include every note Carter plays here but especially his marvelous finger-play on *3-String Blues*, Kenny Burrell's impeccable guitar work on *Gee Baby*, and Julian Priester's scintillating trombone solo on *So Long Blues*. For some unfathomable reason, Garland decided to sing on *The Best Man*, and about the most charitable thing I can say about that is that I'm glad he didn't try it more frequently. Otherwise, "So Long Blues" makes very good listening. *P.G.*

DINAH WASHINGTON: *The Fats Waller Songbook*. Dinah Washington (vocals); orchestra, Ernie Wilkins arr. and cond. *Ain't Misbehavin'; Honey-suckle Rose; Jitterbug Waltz; T'ain't Nobody's Biz-ness If I Do; Someone's Rocking My Dreamboat; Black and Blue*; and six others. EMARCY 818 930-1 \$8.98, © 818 930-4 \$8.98, © 818 930-2 no list price.

Performance: *Wonderful*
Recording: *Excellent remastering*

It is all but inevitable that some day there will be a major revival of interest in the late Dinah Washington, who died in 1963 at the age of thirty-nine. She was an extraordinarily versatile singer who spanned the styles of blues, rhythm-and-blues, jazz, and popular song while always retaining her own distinctive musical personality. An ideal stimulus for such a revival is this reissue of an album where she interprets songs written or immortalized by the great Fats Waller.

The songs are wonderful, and Washington's sympathetic interpretations are backed with brilliant big-band arrangements by Ernie Wilkins. It's all given new life in a spectacularly clear digital remastering. Don't miss it this time around. *P.G.*

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LITTLE ESTHER PHILLIPS

WHEN Esther Phillips died last year at forty-eight, in a California hospital, after years of suffering from the vicissitudes of show biz and a disaster-prone personal life, a line of musical continuity came to an end. Phillips was the last performer in the blues tradition begun by Ma Rainey around 1902 and extending through Bessie Smith to Billie Holiday and Dinah Washington.

It was Washington, too frequently ignored as a major figure in the evolution of modern rhythm-and-blues, who most directly influenced Phillips. Born Esther Mae Jones on December 23, 1935, in Galveston, Texas, Phillips became a child star at the age of thirteen, appearing as "Little Esther" with the Johnny Otis Orchestra in the late Forties. Some of us who were her contemporaries remember hearing Little Esther's recordings on black-oriented radio stations back then. She was a kid who sang with the emotional depth of a mature woman. And her voice, with its peculiar twists and vinegarish quality, bore a remarkable resemblance to that of her idol, Dinah Washington.

The ensuing years brought Phillips more downs than ups, but in the early Seventies she emerged again, now a fully mature singer whose style was indelibly etched with the blues. Her exceptional Kudu album, "From a Whisper to a Scream" and her somewhat earlier live Atlantic album, "Burnin'," earned her the respect of artists like Aretha Franklin as well as of blues fans.

While unevenness was the hallmark of Phillips's career, her right to the man-

tle of her great predecessors is evident throughout the two discs of rereleases of her complete recordings for the Savoy label. Included are tracks she cut as a child and as a young woman during the years 1949 to 1959—a period when the blues as a musical form was still very much alive. At times you can detect the nervousness and even the uncertain intonation of a very young artist, but there can be no doubt about her talent or her precocious ability to interpret lyrics. The later sessions, with more sophisticated arrangements, show her style as it had begun to jell.

These old recordings are full of the humor and the rocking quality of the music that rock-and-roll grew out of. Besides providing a valuable lesson in the development of rhythm-and-blues, this set should ensure that Esther Phillips is granted her rightful place in the history of American popular music.

Phyl Garland

"LITTLE ESTHER" PHILLIPS: *The Complete Savoy Recordings.* Esther Phillips (vocals); Johnny Otis and His Orchestra. *Double-Crossing Blues; Get Together Blues; Lover's Land Boogie; Misery; Mistrustin' Blues; Cupid's Boogie; Just Can't Get Free; Lost in a Dream; Deceivin' Blues; Christmas Greetings; Faraway Christmas Blues; Love Will Break Your Heart for You; I Dream; I Don't Care; I've Got a Longing in My Heart; You Can Bet Your Life (I Do); T'ain't Whatcha Say; If It's New to You; It's So Good; Do You Ever Think of Me; Oo Papa Do.* SAVOY JAZZ © SJL 2258 two discs \$11.98.

Phillips: a kid who sang with the emotional depth of a mature woman



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STEREO REVIEW JULY 1985 69

Discs and tapes
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Robert Ackart
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BACH: Suites for Orchestra (BWV 1066-1069). English Baroque Soloists, John Eliot Gardiner cond. ERATO/RCA
● NUM 750762 two discs \$21.98, © MCE 750762 two cassettes \$21.98, © CD 88048/49 two CD's no list price.

Performance: *Splendid*
Recording: *Excellent*

As we would expect from John Eliot Gardiner and the English Baroque Soloists, this performance of Bach's *Orchestral Suites* is full of vitality. The overtures are lofty but never sluggish, the dances bouncy but never skittish, the articulations precise but never choppy. Lisa Beznosiuk turns in a top-drawer performance of the solo-flute part in the B Minor Suite, and the early instruments sound splendid throughout.

Although there are several other fine recordings of the suites, this one alone brings just the right festive quality to the music, and the overall effect is stunning. If you are considering acquiring these works in authentic performances with early instruments, this set is certainly the one to buy. S.L.

BEETHOVEN: Piano Sonata No. 7, in D Major, Op. 10, No. 3; Piano Sonata No. 23, in F Minor, Op. 57 ("Appassionata"). Murray Perahia (piano). CBS
● IM 39344, © IMT 39344, no list price.

Performance: *Superb*
Recording: *First-rate*

Although Murray Perahia's altogether remarkable first Beethoven record, the Op. 7 and Op. 22 sonatas (CBS M 36695), must have made everyone who heard it eager for more, CBS has resisted the understandable temptation to rush him into a survey of all thirty-two sonatas, waiting more than two years for this second installment. It is on the same heady level as its predecessor: forceful, communicative, deeply felt, filled with uncommon and convincing insights.

The *Appassionata* is here allowed a very deliberate opening gesture, and

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ASHKENAZY'S BEETHOVEN



Vladimir
Ashkenazy
(right)
with
conductor
Zubin
Mehta

V LADIMIR ASHKENAZY'S cycle of the Beethoven piano concertos with Zubin Mehta and the Vienna Philharmonic was released early this year by London Records in boxed sets of LP's and tapes and is now available on four individual Compact Discs, which is the format in which I listened to it. The new cycle demands comparison with Ashkenazy's first one, done in 1973 with Sir Georg Solti and the Chicago Symphony. Those recordings were and are a major achievement musically and sonically, not least because they represent a successful collaboration between two very strong-minded interpreters.

The new set is much more the pianist's show. Overall the performances have a more lyrical emphasis, but I miss a certain crispness in the orchestral part in several of the concertos. For instance, in the First Concerto, in C Major, Ashkenazy brings a Mozartian elegance to the allegro and the slow movement, but not until the finale do we get the kind of brisk alertness from both soloist and orchestra that the music needs. The CD is filled out with the Six Bagatelles, Op. 126, and Ashkenazy beautifully realizes the lyrical aspects of these delectable jewels from the late-Beethoven workshop.

The Concerto No. 2, in B-flat Major, composed earlier than the C Major, is performed with decidedly more crispness and drive. It is coupled with what for me is the finest of all the Beethoven piano concertos, the G Major, No. 4. It's a pity Ashkenazy takes an overly deliberate tempo in the first movement; despite exquisite solo work, the pace drags. His interpretation works superbly in the slow movement, however, and the finale is appropriately brilliant and crisp.

The C Minor Concerto, No. 3, is

somewhat variable, mostly in the orchestral performance. The opening ritornello is too tame, and it takes the entry of the soloist to bring things to life. The outsized cadenza is delivered with enormous fire, conveying something of what Beethoven must have sounded like in one of his celebrated improvisations. Two keyboard staples fill out this disc, the *Andante favori*, which was originally intended for the slow movement of the *Waldstein* Sonata, and the bagatelle inscribed *Für Elise*, to which Ashkenazy brings an especially plaintive sweetness.

The *Emperor* Concerto, in E-flat, finds Ashkenazy and Mehta very much of a mind. The opening movement is done on the grandest scale, with thundering, cadenza-style solo episodes and imperious interjections from the orchestra. The slow movement emerges with Olympian calm and elegance, and the potentially monotonous finale gets a superbly athletic treatment.

All five of the concertos were recorded in Vienna's Sofiensaal, and the sound on the CD's is brilliant and full-bodied. The piano is up front but not glaringly spotlighted; it sounds particularly rich in the slow movements of the B-flat and C Minor Concertos. In the pregnant pauses of the famous slow movement of No. 4 the CD's total lack of surface noise or background hiss contribute greatly to the overall effect.

David Hall

BEETHOVEN: Piano Concertos Nos. 1-5; Six Bagatelles, Op. 126; Andante favori in F Major; Für Elise. Vladimir Ashkenazy (piano); Vienna Philharmonic Orchestra, Zubin Mehta cond. LONDON ● 411 899-1 four discs \$39.92, © 411 899-4 three cassettes \$39.92, © 411 900-2/903-2 four CD's no list price.

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throughout the work there is the assuring feeling of massive strength held in thoughtful reserve until it can be held in check no more. Instead of just another package of Beethoven's three popular nicknamed sonatas, CBS and Perahia have had the imaginativeness to pair this superb performance with an equally distinguished one of the witty and vivacious early Sonata in D Major, Op. 10, No. 3. The slow movement contains a sort of intimacy of what was to come in the later works, but overall it makes for a most agreeable contrast.

No need to go on about it: both sides add further distinction to Perahia's already distinguished discography, and to Beethoven's. The sound and pressing are first-rate. *R.F.*

BRUCKNER: *Symphony No. 7, in E Major* (see Best of the Month, page 57)

CHAUSSON: *Piano Trio in G Minor, Op. 3* **RAVEL: *Trio in A Minor***. Beaux Arts Trio. PHILIPS ● 411 141-1 \$10.98, © 411 141-4 \$10.98, © 411 141-2 no list price.

Performance: *Excellent*
Recording: *Very good*

Chausson's Piano Trio is the sort of piece you rarely get to hear in recital. It is a much earlier work than the famous Symphony in B-flat and the *Poème*, but like those orchestral works and the Concerto for Piano, Violin, and String Quartet, the Piano Trio evinces all the qualities we associate with this composer: strong themes (generally in a melancholy or nostalgic vein), insinuating rhythms, and, overall, that curious blend of nobility and voluptuousness that seems to say "Chausson." It is a strong piece, and it could not be in better hands than it is here. For all I know, the Beaux Arts Trio may have dug up the Chausson just to have a fresh companion for the very familiar Ravel trio, but it *sounds* as if they have played it, and loved it, for years. So, of course, does the Ravel. The recording is focused a bit closer than I'd have liked, but it is very realistic and well balanced. Highly recommended. *R.F.*

GOUNOD: *Roméo et Juliette*. Alfredo Kraus (tenor), Roméo; Catherine Malfitano (soprano), Juliette; José Van Dam (bass), Frère Laurent; Gino Quilico (baritone), Mercutio; Ann Murray (soprano), Stephano; Gabriel Bacquier (bass), Capulet; others. Choeur Régional Midi-Pyrénées; Choeur du Capitole de Toulouse; Orchestre National du Capitole de Toulouse, Michel Plasson, cond. ANGEL ● DSCX-3960 three discs \$36.98, © 4D3X-3960 three cassettes \$36.98.

Performance: *Glowing, stylish*
Recording: *Excellent*

Roméo et Juliette is an immediately accessible opera, but the better musical passages also become more deeply enjoyable as the listener becomes increas-



Malfitano: an accomplished Juliette

ingly familiar with them. The libretto, with some variation from Shakespeare, was based on Victor Hugo's then-new translation. The story unfolds with the same straightforward sincerity characteristic of the music. If it is not a great opera, it is a most appealing one and contains some of Gounod's most elegant music.

"Elegant" is perhaps the word to describe this performance too. At the outset there is elegance in Michel Plasson's sure and sensitive conducting. He has a feeling for and an understanding of Gounod's score, which though never profound is always theatrically effective and emotionally appealing, and he brings forth the best from his orchestra and two choruses.

There is more elegance in the diction, which is of a high order throughout, though only one of the principals, Gabriel Bacquier, is French. Everyone's articulation is exemplary.

And, speaking of elegance, what can I say of Alfredo Kraus that has not already been said? He brings a particularly ardent youthfulness to his characterization of Romeo. "*Ah, lève-toi, soleil!*" is a lesson in the art of singing. Later, when he soars, *forte*, to a high B-natural and then reduces the tone to *piano*, his technical command and musicality are awesome.

Catherine Malfitano is Juliette. Her clear, silvery voice and sense of character complement Kraus in this evocation of youth and first love. Her Waltz Song is sung simply, not as a showpiece; the Potion Scene, which can easily be overplayed, and is not infrequently strident, is here contained as part of the total performance. She is an accomplished and sensitive artist. Bacquier, José Van Dam, and Gino Quilico are all vocally impressive and dramatically convincing as well, and Ann Murray performs Stephano's "*Que fais-tu, blanche Tourterelle* . . ." with polished grace. There is no weak link in the cast. Highly recommended. *R.A.*

HANDEL: *Water Music*. Berlin Philharmonic Orchestra, Riccardo Muti cond. ANGEL ● DS-37857 \$11.98, © 4DS-37857 \$11.98.

HANDEL: *Water Music*. Linde Consort, Hans-Martin Linde cond. ANGEL ● DS-38154 \$11.98, © 4DS-38154 \$11.98.

HANDEL: *Music for the Royal Fireworks; Concerto a due cori in F Major*. Cappella Coloniensis, Hans-Martin Linde cond. ANGEL ● DS-38155 \$11.98, © 4DS-38155 \$11.98.

Performances: *Muti on target*
Recordings: *Fine*

Riccardo Muti's modern-style performance of Handel's *Water Music* is a grand one despite the lack of Baroque mannerisms and articulation—and the well-meaning but inappropriate use of short harpsichord cadenzas between some of the movements (surely Handel knew enough not to put a harpsichord on a river barge). The full-bodied sonorities of the Berlin Philharmonic, with excellent horn playing, are well-suited to the large outlines of this outdoor music.

Hans-Martin Linde, on the other hand, takes full advantage of recent musicological research in his two albums with early-instrument ensembles, his own Linde Consort and the Cappella Coloniensis. Details may be authentic, but the sound is dry, the horns (whose playing is somewhat fuzzy) are too dominant, and the movements all tend to sound alike. Moreover, the application of French dotted rhythms to the overture of the *Music for the Royal Fireworks* (Handel certainly would have written dots if he had wanted them) is unnecessary.

All in all, Muti with the larger orchestra captures Handel's intentions better than Linde. This is a case where basic musicianship is more telling than historical "authenticity." *S.L.*

KHACHATURIAN: *Violin Concerto in D Major*. **TCHAIKOVSKY: *Méditation, Op. 42, No. 1***. Itzhak Perlman (violin); Israel Philharmonic Orchestra, Zubin Mehta cond. ANGEL ● DS-38055 \$11.98, © 4XS-38055 \$11.98, © CDC-47087-2 no list price.

Performance: *Sizzling*
Recording: *Brilliant*

The Khachaturian Violin Concerto is no earth-shaking masterpiece, but when it is played by a virtuoso like Itzhak Perlman, backed by a conductor like Zubin Mehta who has a real flair for this kind of extroverted music, the piece can be a lot of fun. Certainly Perlman, Mehta, and a very alert Israel Philharmonic give the music everything they've got in this recording. They take the end movements at the good, stiff clip the music needs, and in the lush slow movement all the expressive and coloristic stops are pulled out.

Perlman is absolutely at the top of his dazzling form here, with sizzling pas-



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sage work in the fast movements, an utterly breathtaking execution of the very lengthy and difficult first-movement cadenza, and full justice to the languorous Armenian coloring of the slow movement. He is just as successful in conveying the plaintive lyricism of Tchaikovsky's *Meditation* (in the Glazounov orchestration).

The somewhat tight acoustical surround works to the advantage of the Khachaturian concerto in helping to achieve a sharp definition of line in the kaleidoscopic wind and percussion sections as well as enhancing the bite of the work's dance-inspired rhythms. I listened to the LP and the CD versions, and both are excellent, though the CD has just that extra measure of definition in the high frequencies and generally greater dynamic impact. The balance between soloist and orchestra in both versions is near perfect. *D.H.*

MAHLER: *Lieder* (see Collections-MariAnne Haggander)

MOZART: *Piano Sonata No. 15, in C Major* (K. 545); *Piano Sonata in F Major* (K. 533/494); *Rondo in A Minor* (K. 511). Mitsuko Uchida (piano). PHILIPS 412 122-1 \$10.98, © 412 122-4 \$10.98, © 412 122-2 no list price.

Performance: *Provocative*
Recording: *Close-up*

The first installment in Mitsuko Uchida's Mozart sonata cycle (Philips 412 123) introduced her as an uncommonly intelligent artist and an original musical thinker, though by no means an eccentric one. This second release is similarly provocative, if perhaps a bit less convincing in some respects.

I have no reservations about the A Minor Rondo. Uchida's stark, bare-bones style sets its grim little drama before us in the noblest sort of way, with understated pathos. The same approach in the C Major Sonata, however, for all its crystalline clarity, is a bit jarring in its cheerlessness. For every listener who finds this performance revelatory of hitherto unsuspected substance and depth, I imagine there will be two or three others to whom it will appear instead that Uchida has taken a deliberate pace in order to be sure of getting the notes right, as well as another handful simply baffled by her seeming determination to turn an unassuming *sonata facile* into a keyboard *Eroica*. Her understatement at the ends of the fast movements in both sonatas here strikes me as a curious insistence on anticlimax. But she *does* get to the very heart of the slow movement!

While in general I think I'm happier with András Schiff's performances on his very generously filled London analog LP's, Uchida's versions are more than intriguing for alternate listening and should insure the most serious attention to whatever she may offer in the future. The piano sound is very realistic and also very close up. *R.F.*

RAVEL: *The Complete Songs* (see Best of the Month, page 58)

RAVEL: *Trio in A Minor* (see CHAUS-SON)

SIBELIUS: *Symphony No. 4, in A Minor, Op. 63; Symphony No. 7, in C Major, Op. 105.* Helsinki Philharmonic Orchestra, Paavo Berglund cond. ANGEL DS-38135 \$11.98, © 4DS-38135 \$11.98.

Performance: *Distinguished*
Recording: *Excellent*

This appears to be the first pairing of Sibelius's two greatest (or, in any event, two most individual) symphonies on a single LP or tape. It is a very distinguished release and another superb "demo" for the DMM process. Neither of Paavo Berglund's two earlier recordings of the Sibelius Fourth was issued domestically in our country, and neither was in the same class as this new Anglo-Finnish production, musically or sonically. Berglund has the measure of this music, he draws first-rate playing from the Helsinki Philharmonic, and the recording itself misses nothing in terms of vividness or detail. The scherzo could have had a mite more animation, perhaps, and the first movement a deeper sense of the mystic, but there is nothing else to fault, and the work fits snugly on a single side, leaving side two for a possibly even more impressive presentation of the radiant Seventh, which in every respect is the hands-down winner among currently available recordings. *R.F.*

R. STRAUSS: *Sinfonia Domestica, Op. 53.* Vienna Philharmonic Orchestra, Lorin Maazel cond. DEUTSCHE GRAMMOPHON 413 460-1 \$10.98, © 413 460-4 \$10.98, © 413 460-2 no list price.

Performance: *A charmer*
Recording: *Very fine*

Richard Strauss's *Sinfonia Domestica* often seems the work of an overbearing egotist exploiting his home life as a vehicle for inflated orchestral virtuosity, but it *can* be done as a fun piece, full of humor and tenderness, and in the concluding section, with its elaborate double fugue, a brilliant eruption of high spirits.

Lorin Maazel takes essentially the latter route in this superb live recording. There is both ardor and humor in the first half, and the "dreaming music" offers some wonderfully delicate playing and beautifully worked-out textural balances. In the passages where Strauss has eight horns going their own way at full tilt, the sense of instrumental separation is remarkably well conveyed.

At least nine recordings of the *Sinfonia Domestica* have been in and out of Schwann, but Maazel's is the only stereo one now available. As far as I am concerned, it fills the bill perfectly. The music may not suit every taste, but for Strauss fans this version is a must. *D.H.*

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TCHAIKOVSKY: *Méditation, Op. 42, No. 1* (see KHATCHATURIAN)

TCHAIKOVSKY: *Symphony No. 4, in F Minor, Op. 36*. Chicago Symphony Orchestra, Sir Georg Solti cond. LONDON ● 414 192-1 \$10.98, © 414 192-4 \$10.98, © 414 192-2 no list price.

Performance: *Powerful*
Recording: *Brilliant*

Sir Georg Solti's approach to the Tchaikovsky Fourth is straightforward and high-powered without being brutal. I received the greatest pleasure from the way he and the Chicago Symphony shape the transitional and secondary thematic material in the opening movement and from the lovingly handled dynamic gradations in the lengthy coda.

The famous pizzicato scherzo is an ideal showpiece for the CD format, with its perfectly quiet background, and Solti makes the most of it. The much-maligned finale gets a properly fierce treatment where that's needed, but the lyrical details are not neglected. Throughout the score, in fact, wherever there are significant counter-figures or themes, Solti gets them in place without exaggeration or affectation. In short, this is a musicianly interpretation with all the dramatic punch and color one could ask, and the sonics are excellent, especially on Compact Disc. *D.H.*

WAGNER: *Götterdämmerung: Siegfried's Rhine Journey; Siegfried's Death and Funeral March; Brünnhilde's Immolation and Finale*. Ute Vinzing (soprano); James King (tenor); Philharmonic Symphony Orchestra, Carlos Pañta cond. LODIA ● LOD-785 \$12.98, © LOC-785 \$12.98, © LOCD-785 no list price.

Performance: *Noble, spacious*
Recording: *Awesomely vivid*

Carlos Pañta's new package of excerpts from *Götterdämmerung* is the conductor's first digitally recorded Wagner as well as his first recording with soloists, either instrumental or vocal. The music is performed just as it is in the theater, without the concert endings Humperdinck provided for the two shorter items. All three episodes are given spacious, noble, intensely impassioned readings in which every strand is crystal clear yet blends into the whole so as not to impede the stately momentum. James King delivers Siegfried's Farewell most affectingly, and in her longer scene Ute Vinzing is a vibrant, striking Brünnhilde. She sounds fresh and youthful, projecting the most touching pathos in reminding us that these are young lovers betrayed and cut down.

The recording does not spotlight either singer. Vinzing has to blend with and cut through Wagner's considerable

orchestral forces, and this approach proves to be more striking than one in which the orchestra is held back (by either the conductor or the engineer) to accommodate the singer. The final cataclysm is all one might hope for. The sound is awesomely vivid, especially on the CD, though the LP, processed with DMM, is nearly as impressive. The only lapse is Lodia's failure to provide texts with either version of this splendid recording. *R.F.*

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PLACIDO DOMINGO AND PILAR LORENGAR: *Zarzuela Arias and Duets*. Placido Domingo (tenor); Pilar Lorengar (soprano); Austrian Radio Symphony, Garcia Navarro cond. CBS ● IM 39210, © IMT 39210, no list price.

Performance: *Spirited*
Recording: *Well balanced*

The Spanish zarzuela often evokes the idea of a folk comedy with music, as artless and ingenuous, say, as the play within a play of Leoncavallo's *Pagliacci*. Not so, as the notes to this album point out and the performances of Placido Domingo and Pilar Lorengar prove. The zarzuela started as aristocratic entertainment and was later adopted by the common people. While

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its music has a strong national flavor, it is composed for the purpose at hand, and well composed at that. To judge from the sampling here, the primary emotion is love—cynical love, love turning to hate, romantic love, love of homeland, and even love of God.

Zarzuela music is immediately accessible, and it is performed in this recording with energy, verve, and conviction by two Spanish artists completely at home with their material. Lorengar's tremolo, for example, while sometimes disconcerting in Mozart performances, seems to enhance the excitement of her performances here. Domingo is in fine vocal and interpretative fettle. And the orchestra under Garcia Navarro's sure hand plays with accurate vigor. Recorded in performance at the Salzburg Festival in 1983, the disc includes audience applause that is nearly frenzied in its enthusiasm. With reason. R.A.

MARIANNE HÄGGANDER: *Lieder*. Walter: *Musikantengruss; Die Lerche; Des Kindes Schlaf; Elfe*. Karg-Elert: *Ein Wanderlied; Kehr' ein bei mir; Deine Seele; Deine Wirkung; Was die Liebe sei*. Mahler: *Frühlingssorgen; Erinnerung; Hans und Grethe; Phantasie; Ich ging mit Lust durch einen grünen Wald; Starke Einbildungskraft; Ablösung im Sommer; Scheiden und Meiden; Nicht wiedersehen!* MariAnne Häggander (soprano); Lars Roos (piano). BLUEBELL/PSI • BELL 180 \$9.98.

Performance: *Sensitive*
Recording: *Good presence*

This beautifully sung album of songs by Mahler, Sigfrid Karg-Elert (1877-1933), and Bruno Walter is unified through the imagistic poetry of the texts, which present word pictures of situations and emotions without narration or, for the most part, comment. In consequence, the music, complementing the words, is all introspective and thoughtful. There are, therefore, no "exciting" pieces in the album, but a different and very valid excitement is evoked by MariAnne Häggander's clear, well-centered soprano, notably warm in the middle register and of some brilliance at the top. Her diction is excellent, her sense of line admirable, and her interpretations show close identification with the texts as well as thoughtful and sensitive appreciation of the music. She sings with a composed tranquillity and tenderness—and a sure sense of control—that make this album a model of lieder performance.

Special mention should be made of the four heretofore unrecorded Walter songs on poems of Josef von Eichendorff, especially the beautiful *Die Lerche (The Lark)*. The Mahler songs, all early and five of them based on the German folk poetry of *Das Knaben Wunderhorn*, a source Mahler used often, illustrate well the singer's involvement with her material. And the short *Ablösung im Sommer* demonstrates especially well the strong capabilities of pianist Lars Roos as accompanist. R.A.

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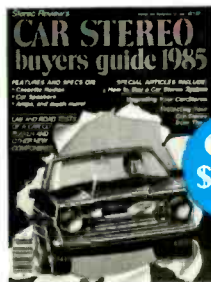
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VIDEO REVIEWS

Discs and tapes
reviewed by
Chris Albertson
Louis Meredith
Alanna Nash

ADAM: *Giselle*. Kirov Ballet; Galina Mezentseva, Konstantin Zaklinsky (principal dancers). Choreography by Jean Coralli and Jules Perrot, revised by Marius Petipa. Orchestra of the Leningrad Theatre of Opera and Ballet, Viktor Fedotov cond. THORN EMI TVE 2803 VHS \$39.95, TXE 2803 Beta \$39.95.

Performance: *Dazzling*
Recording: *Very good*

The tragic love affair of *Giselle*, a peasant girl turned ghost, has been delighting ballet enthusiasts for nearly a century and a half. Though created in Paris, it was in St. Petersburg, now Leningrad, that this romantic tale really blossomed. Ballerina Galina Mezentseva earns every bit of applause the boisterous audience gives her at the conclusion of this Kirov Ballet production. It takes a while for this *Giselle* to come alive, so to speak, but once it gets off the ground it soars. You may wish to cut the tape off during the lengthy curtain call, if only to avoid the burst of machine-gun fire that heralds a series of commercials for Thorn EMI films. C.A.

CULTURE CLUB: *A Kiss Across the Ocean*. Culture Club (vocals and instrumentals); instrumental accompaniment. *I'll Tumble 4 Ya; Mister Man; It's a Miracle; Karma Chameleon; Black Money; Love Twist; Miss Me Blind; Church of the Poison Mind*; and four others. CBS/FOX 665934 VHS Hi-Fi \$29.98, 665924 Beta Hi-Fi \$29.98.

Performance: *Appealing, but . . .*
Recording: *Slightly overbright*

Originally broadcast on HBO, "A Kiss Across the Ocean" documents a 1983 Culture Club show in London, with the band performing a well-paced program of their greatest hits in front of a rapturous audience, most of whom seem to be dressed like Boy George. George himself is in fine voice, the band (augmented with horns and keyboards) sounds wondrously slick yet still manages to work up a considerable head of enthusiasm and steam (notably on *Karma Chameleon*), and director Keef (one name only, like Sabu) catches a lot of interaction between the musicians, all of whom seem to genuinely enjoy what they're doing as well as each other.

The whole thing is oh-so-cute and (Continued on page 86)

WHAM! THE VIDEO



HERE'S a remarkably unsettling artifact. "Wham! The Video," an anthology from CBS/Fox, raises to a principle the current not-so-subtle trend toward blurring the distinctions between rock videos and commercials for designer clothing.

There is music on the tape, of course, but as *Careless Whisper* makes clear, even in the musical area the Wham! boys—George Michael and Andrew Ridgeley—are more muddleheaded than we previously suspected. This time they don't come off as masters of the r-&-b pastiche but as highly successful jingle writers. If *Careless Whisper* sounds like anything at all, it's like the soundtrack for the greatest unproduced shoe-store commercial ever.

If you think I'm exaggerating, check the tape out for yourself. *Club Tropicana*, for example, shows the boys on holiday (mostly by the pool), and it's costumed, photographed, and edited like a Club Med spot. In *Last Christmas* we see them vacationing at a ski resort and changing their clothes with the speed and panache of professional fashion models. The point of these clips seems to be the virtue of conspicuous consumption.

We also get to view the boys' meteoric evolution from pseudo-punk tough guys to squeaky-clean pop idols. In the opening *Wham Rap*, a sort of Eighties Up With People number, Michael struts around in black leather looking like John Travolta's understudy in *Grease*. But by the time we get to *Wake Me Up*

Before You Go-Go, he's cavorting in track shorts like an aerobics instructor. The switch is, of course, an astute commercial calculation. Although Michael looks so wholesome you want to gag, the clip *does* work up a little sweat, and the song itself is not offensive.

All is not English Yuppie posturing, however. In the concluding *Everything She Wants*, a slickly edited, though long, concert collage, Wham! pulls one last amazing switcheroo. Before our very eyes, George Michael, his hair gone longish and windblown, his shirt open nearly to his waist, his manner sincere beyond belief, turns himself into the contemporary equivalent of Barry Gibb back in the Bee Gees' disco period. All that's missing is the chest hair and the gold medallions. Whether you find the metamorphosis depressing or uplifting will depend, no doubt, on your degree of nostalgia for the likes of *Saturday Night Fever*. For my part, I found it just one more example of the almost Brechtian alienation that pervades "Wham! The Video."

The hi-fi stereo sound (I heard the VHS version) is superb. Whether it really needs to be is open to question.

Louis Meredith

WHAM!: *The Video*. Wham! (vocals and instrumentals). *Wham Rap; Bad Boys; Club Tropicana; Wake Me Up Before You Go-Go; Careless Whisper; Last Christmas; Everything She Wants*. CBS/FOX 3048 VHS Hi-Fi and Beta Hi-Fi \$19.98, 3048-88 LaserDisc \$19.98.



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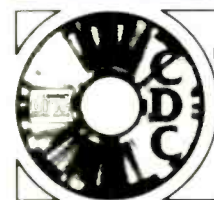
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appealing, and you can't argue with the songs, but for my taste the lack of any discernible rough edges and the abundance of show-biz bonhomie eventually begins to grate.

Reviewing Culture Club's first album in these pages, my colleague Steve Simels noted that the band's music was an attractive contemporary equivalent of the early-Seventies "soft-soul" of groups like the Chi-Lites, but then qualified that assessment by observing that "at least the Chi-Lites were up front about wanting to wind up in Las Vegas." With its subtle but unmistakable atmosphere of a glorified supper club, "A Kiss Across the Ocean" suggests that Culture Club is beginning to be up front about that as well. L.M.

THOMAS DOLBY. Thomas Dolby (vocals and instrumentals). *Europa and the Pirate Twins*; *Radio Silence*; *She Blinded Me with Science*; *Hyperactive!* PIONEER ARTISTS PA-84-M011 Laser-Disc \$12.99.

Performance: *Incoherent*
Recording: *Excellent*

Depending on your point of view, this new collection of videos by Thomas Dolby, the music business's answer to Don ("Mr. Wizard") Herbert, is either an amusing mixed bag or eclecticism run amuck. *Europa and the Pirate Twins*, for example, which stars Dolby as a movie-house projectionist, derives its visual look and feel from a merger of computer imagery, Thirties *Amazing Stories* pulp science-fiction graphics, and swipes from Richard Lester's directorial work on *A Hard Day's Night*. And *Radio Silence* features all the above plus the traditional rock-video slinky siren and some half-baked psychedelic surrealism (whew!).

Somewhat less baroque is *She Blinded Me with Science*, a moderately amusing jape in which Dolby arrives at the Home for Deranged Scientists, which allows for a lot of in jokes referring to the Sixties cult film *Morgan* ("a suitable case for treatment," we are advised by a silent-film title card). The concluding *Hyperactive!* continues the same theme, with Dolby talking to a psychiatrist while all around him the spectacular computer animation and special effects recall nothing so much as the (far wittier) early TV work of the late Ernie Kovacs.

None of this stuff is dull, exactly (although I find myself able to resist Dolby's music, a bloodless, functional brand of electronic funk), but none of it is as clever or as funny as it means to be either. In the immortal words of the Replacements, currently America's greatest non-MTV rock-and-roll band, "Seen your video. We don't want to know." L.M.

HOWARD JONES: *Like to Get to Know You*. Howard Jones (vocals, keyboards). *Hunt the Self*; *What Is Love*; *Hide & Seek*; *Bounce Right Back*; *New Song*; *Like to Get to Know You*; and

three others. WARNER HOME VIDEO 34070 VHS Hi-Fi and Beta Hi-Fi \$29.98.

Performance: *Stimulating*
Recording: *Good*

Howard Jones may not be a big name in America yet, but in his native England he's been packing them in for some time now. His style falls somewhere between New Wave and pop—he plays a kind of punk for people who don't necessarily want to wear straight pins through their noses—and the overall effect is pretty heady.

"Like to Get to Know You" is a concert performance intercut with concept, or dramatic, footage. When Jones gets on stage, surrounded by his bank of computerized synthesizers and assorted keyboards (there's also a male mime, who puts a bizarre edge on a couple of the numbers), he becomes a sort of wizard of electronic music theater. The whole thing has a distinctly British feel to it, and it's a high-class offering from start to finish, as stimulating visually as it is musically and emotionally. Much of it, in fact, looks like an avant-garde film. If you're interested in this kind of music at all, this guy is for you. A.N.

J. STRAUSS: *Die Fledermaus*. Kiri Te Kanawa (soprano), Rosalinde; Hildegard Heichele (soprano), Adele; Doris Soffel (mezzo-soprano), Orlofsky; Hermann Prey (baritone), Eisenstein; Benjamin Luxon (baritone), Dr. Falke; others. Orchestra of the Royal Opera House, Placido Domingo cond. PIONEER ARTISTS PA-84-099 two LaserDiscs \$49.95.

Performance: *Great fun*
Recording: *Very good*

This performance of Johann Strauss's popular operetta *Die Fledermaus* was taped live at the Royal Opera, Covent Garden, on New Year's Eve, 1983, and the producers made the most of the occasion by adding extra glitter to Prince Orlofsky's party scene. A most unusual collection of performers turn up, including ballet dancers Merle Park and Wayne Eagling (imaginatively choreographed by Sir Frederick Ashton); singer Charles Aznavour, whose rendition of *She* seems oddly in place here; and the popular British drag act of Dr. Evadne Hinge and Dame Hilda Bracket, who perform *Donkey Serenade* and *Three Little Girls from School*—"for two voices." Even Placido Domingo, making his British conducting debut, becomes a part of the merriment as Hermann Prey, in the role of Eisenstein, turns to him and exclaims "*Placidissimo!*" Let's do the opening number of Barinkay from *The Gypsy Baron*. It is all infectious fun.

Prey, Kiri Te Kanawa, Hildegard Heichele, and Benjamin Luxon head an outstanding cast. The sets, costumes, and video direction are superb, as is the technical quality of these LaserDiscs. The whole splendid affair runs about three hours. C.A.

CD: HERE TO STAY
(Continued from page 43)

ance of the bulky, troublesome vinyl disc.

Does all of this suggest the rapid replacement of the phonograph record and the turntable by the Compact Disc and its player? And what of the cassette—currently well ahead of vinyl records and CD's on the world market and still growing rapidly? Where will the CD fit into the total software picture when it at last becomes a "mature" category?

The feeling in the industry is that CD sales will achieve "dollar parity" with record sales within five years and perhaps as early as three. Robert Heiblim, vice president of sales and marketing for Denon, states, "CD's will overtake phonograph records sometime within the decade. [Sales of] turntables will decline by 15 to 20 percent every year thereafter, and within six years [the turntable] will be a minor [component] category. By 1990 record companies will be making a choice—should we continue pressing records?" Yet Heiblim does not predict the total extinction of the phonograph: "There will be a market for very high-quality analog records in the Nineties."

Marc Finer of Sony takes a more extreme position. "The CD will become the single music medium. It's suitable for portable and automotive applications as well as use in the home. It will largely displace cassettes because there's no longer any need to dub music off of records." And Emiel Petrone, senior vice president of PolyGram Records and chairman of the industry-wide Compact Disc Group, predicts dollar parity between CD's and records in the United States as early as 1987. "Once parity is achieved," he says, "the decline of the phonograph record will be very rapid." At the same time, Petrone hesitates to predict the total disappearance of the phonograph. "I think it will survive on the low end," he asserts.

Despite these predictions, none of the major record labels have indicated plans for phasing out record production, and the rapid obsolescence of the cassette format seems even less likely by most accounts. Prerecorded cassettes and cassette decks are inexpensive to make and extremely profitable. CD hardware and software may never appear at equally attractive price points.

But no one argues that the phonograph record is not in serious trouble, not even Doug Sax, president of

Sheffield Lab, or Marcia Martin, marketing director of Reference Recordings. I asked both of them the same question: "What is the future of the analog record?"

"We think that there will continue to be a small market for quality analog records," said Martin. "Many people still object to the sound quality of existing digital formats, and many of the same people have invested in very expensive turntables. We think the American market in the nineties will ultimately be about twenty thousand people." (That figure, incidentally, is based in part on subscription totals for leading "underground" audio journals, at least two of which have taken strong editorial positions against Compact Discs.)

Doug Sax's answer to my question was more cautious. "I don't know how big the market is. I know that the phonograph record is still the best playback medium for the home, and I believe that we can continue to sell records. I am going to Europe to record major symphony orchestras in analog—possibly the last time that this will be done. I think it's important that at least some of the significant musical performances of the present be preserved in this way. I hope our records find an audience," Sax adds. "If they don't, we stand to lose a lot of money."

The long-term survival of a shrunken analog industry is certainly possible. After all, a market for vacuum-tube electronics continues to exist twenty years after most manufacturers went solid-state. Indeed, tube devotees voice many of the same objections to the "transistor sound" that analog diehards do to digital recording. But without the support of the larger consumer electronics industry, analog disc recording and playback will remain essentially static, and makers of analog records will be forced to toil on with aging disc-cutting lathes and cutting amps that will eventually be unrepairable. It's hard to predict a secure future for an orphan industry.

Of course, the Compact Disc itself may be superseded. Other digital storage media have been developed, and more will follow, some with greater information-storage capabilities, record-erase provisions, and various other advantages. But the music industry is certain to stand behind the CD at least into the next century, and in its time the Compact Disc will be the dominant medium. □

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JULY



by Christie Barter
& Steve Simels

ARE they the poster kids for National Brotherhood Week? Nah, that's the New-Age Sonny and Cher, better known as Tina Turner and David Bowie, huddled



DAVE HOGAN/LGI

Turner, Bowie: sequels

backstage after a recent Turner concert in London. The concert will be coming soon to your home-entertainment center courtesy of HBO. Anyone without cable television needn't feel left out, however; Turner, currently hard at work on her follow-up to the most successful come-back album in recording history, will soon be seen with Mel Gibson in the forthcoming sequel to *The Road Warrior*, while Bowie's well-received *Jazzin' for Blue Jean* miniseries will be available as a Pioneer LaserDisc in equally short order. □

MYSTERY GUITAR STAR REVEALED! Earlier this year, viewers who caught Bob Dylan's *Sweetheart Like You* video were justifiably nonplussed when they noticed that the tall blonde was faking her way through the guitar solos actually being played by Dire Straits' Mark Knopfler. Who was the woman, anyway?

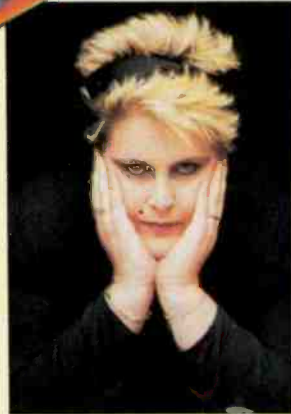
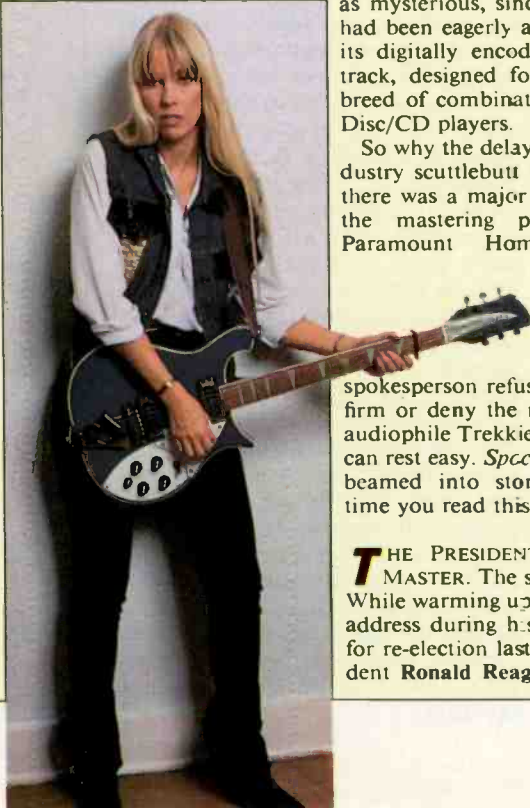
Well, now it can be told:

she's the Textones' Carla Olson, whose debut album, "Midnight Mission," is just out on A&M. Once in a band with Kathy Valentine of the Go-Go's, Olson turns out to be a pretty fair guitarist, and the Textones (also featuring Phil Seymour, of Dwight Twilley Band fame) seem like a pretty solid little mainstream rock outfit. Only thing we want to know now is, will Dylan lip-sync Olson's vocals if they do a video? Stay tuned. □

TO prove that there is life after Madonna, we give you Alison Moyet, better known to her friends as "Alf," which is also the title of her recent Epic album. Commercially speaking, Moyet seems to have a few strikes against her: she doesn't pout, she does not sing about dating boys with lots of cash, and she does not in any way act like the protagonist of a *Jordache* ad.

Instead, Moyet does something that in 1985 may be somewhat old-fashioned: she sings, and with as much genuine soul as anybody we've heard in years. Skeptics should hear *Invisible*, the single written for her by Lamont

Olson: no fake



EPIC RECORDS

Moyet: no nonsense

Dozier, one-third of one of the best original Motown songwriting teams.

Can somebody as unaffected as Moyet make it in today's American market? Well, her album is currently hovering in the middle of the charts. As the Count of Monte Cristo observed, wait and hope. □

WHERE NO MAN HAS GONE BEFORE: You may have noticed that *Star Trek III: The Search for Spock*, currently one of the top video tapes in sales and rentals and a best-selling CED disc, has been missing from the stores in its LaserDisc version. This struck us as mysterious, since the disc had been eagerly awaited for its digitally encoded soundtrack, designed for the new breed of combination LaserDisc/CD players.

So why the delay? Well, industry scuttlebutt has it that there was a major foul-up in the mastering process. A Paramount Home Video

spokesperson refused to confirm or deny the rumor, but audiophile Trekkies out there can rest easy. *Spock* will have beamed into stores by the time you read this. □

THE PRESIDENT AS RAP MASTER. The story so far: While warming up for a radio address during his campaign for re-election last fall, President Ronald Reagan made a

joke about bombing Russia. Talking Heads keyboard player Jerry Harrison got mad, and, using a digital speech synthesizer, he set the President's remarks to a crunching funk track done in collaboration with noted bassist Bootsy Collins. The result, billed as *5 Minutes by Bonzo Goes to Washington*, is one of the most chilling dance records of recent memory, but it became a substantial club hit.

Now, Harrison and some associates have worked up a video to accompany the opus featuring a cameo appearance by the tune's lyricist and vocalist. MTV, predictably, won't air it, but many of the more adventurous local rock video shows will and do.

The moral of the story? You can draw your own conclusions. □



SLEEPING BAG RECORDS

No kidding?

THE Association for Classical Music recently polled its membership of over 350 music-business professionals, asking for their nominations of the Ten Greatest Works in the classical repertoire. "Clearly on top of the heap," according to the results published by the AfCM, was Stravinsky's *The Rite of Spring*. Runners-up, which were less surprising, included the more mainstream works of Bach, Mozart, Beethoven, and Wagner. □

DESPERATELY SEEKING MADONNA! That's what people were doing in New York recently, where tickets to the singer's concerts at Radio City Music Hall were completely sold out at 9:05 a.m. after going on sale at 8 a.m., a record even Liberace can't match.



ANDY SCHWARTZ/ORION PICTURES

Madonna: a box-office record even *Liberace* can't match

What causes such a phenomenon? Part of the reason, probably, is the chanteuse's appealing performance in Susan Seidelman's hit New Wave bedroom farce *Desperately Seeking Susan*—not to mention her self-proclaimed born-to-flirt stance, about which the less said in a family magazine the better. Mostly, though, we suspect it's because of Madonna's obvious vocal resemblance to several earlier singing film stars, namely the Munchkins in *The Wizard of Oz*. A cover version of *Ding Dong, the Witch Is Dead* is not, however, in the cards. Similarly, don't hold your breath waiting for a home-video version of what people are referring to as "the Madonna movie" until next year at least. □

WEBER'S opera *Der Freischütz* was the last work performed at the Semp-er Opera House in Dresden, Germany, before it was destroyed by British and American air raids at the end of World War II. Rebuilt and painstakingly refitted, the house reopened earlier this year on the fortieth anniversary of the bombing with a gala performance of *Der Freischütz* followed soon afterward by a performance of Richard Strauss's *Der Rosenkavalier*. Denon's engineers were on hand to record both performances live. At press time the company had released the Weber opera on LP's and Compact Discs. The Strauss recording is scheduled to follow. □

MULTITRACK recording is so commonplace today that it is taken for granted. It was started by veteran guitarist Les Paul exactly forty years ago, and this year Paul was honored by ASCAP for introducing overdubbing techniques still in use today with his recording of Richard Rodgers's now-classic tune *Lover*. The recording is still in the catalog on Capitol's "Early Les Paul." □

A LIVE and never-before-released album by the "legendary" Sam Cooke has just been issued by RCA Records. Recorded more than twenty years ago at a night club in Miami, "Sam Cooke—One Night Stand" features on-stage versions of many of Cooke's biggest hits. Cooke produced a string of hits for RCA from the day he joined the company in 1960 until his death in 1964 at the age of thirty-three.

Eight previously unreleased

Ozawa (right) and student: learning the ropes at Tanglewood



WALTER SCOTT/BOSTON SYMPHONY

tracks by Marvin Gaye make up the collection "Dream of a Lifetime" (Columbia). Much of the material is from an album Gaye was working on just before his death last year. □

THE half-hour weekly series "Alive from Off Center," beginning July 1 on the PBS television network, promises the "often satirical, sometimes whimsical, and always off-beat" from America's top progressive talent. Among the guests sure to deliver on that promise are performance artists Laurie Anderson and David Byrne. A founding member of Talking Heads, Byrne is also composing the theme music for the series. □

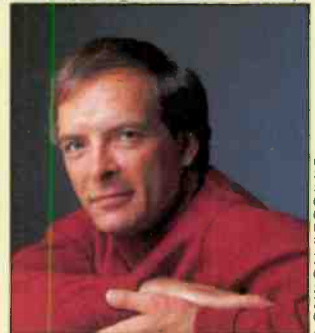
CONDUCTORS: John Williams, who is conducting the Boston Pops in its hundredth-anniversary season this summer, is also taking the orchestra on a fourteen-stop transcontinental tour. The tour's official launch is on July 4 at Boston's Charles River Esplanade. From there they'll dip south as far as Washington, D.C., playing on the steps of the Lincoln Memorial on July 14, and then head cross-country to reach the Hollywood Bowl on July 31 and San Diego's Civic Theatre on August 1. Issued in connection with the anniversary and the tour is a new Philips album by Williams and the Pops titled "America, the Dream Goes On."

Anyone interested in watching some of the record makers of today training the

record makers of tomorrow should tune in to *Tanglewood—A Place to Make Music* on the Arts & Entertainment network. Filmed on the grounds of one of the country's leading music festivals and the summer home of the Boston Symphony, the two-hour documentary features the orchestra's music director, Seiji Ozawa, as the guiding spirit behind what is also



BOSTON SYMPHONY



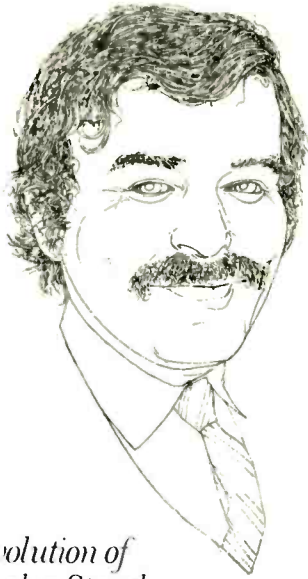
LONDON RECORDS

Williams (top) and Hogwood: on the straw-hat trail

one of the country's leading centers for advanced musical study. The program is being shown in two parts, on June 20 and 27.

Christopher Hogwood has probably achieved a record for a classical recording artist by having five entries on *Billboard*'s classical-album chart at the same time—and for holding that commanding position, as of press time, for over a month. Hogwood is also going to be more visible than ever this summer with festival dates at Wolftrap, Blossom, and Tanglewood as well as return engagements at the Hollywood Bowl and New York's Mostly Mozart. His latest album for London couples Haydn's *Surprise* and *Miracle Symphonies*. □

by Ralph Hodges



The Evolution of the Speaker Stand

IF memory serves, Acoustic Research offered the first speaker stands made by a speaker manufacturer, back in the late Fifties. Even AR's largest models were popularly referred to as "bookshelf" speakers, but many smallish bookshelves didn't agree, and there were always those consumers who didn't have bookshelves at all. So AR put together an attractive little platform to get its speakers up off the floor, where much of their higher-frequency output might otherwise be swallowed by the carpet.

The Seventies ushered in a new form of speaker stand, which tilted the speaker back so it was partially aimed at the ceiling. This treatment amounted to a further restorative of reverberant high-frequency energy, and it also tended to align the acoustic centers of the drivers vertically, so that emissions from woofer and tweeter were likelier to reach the listener simultaneously. There is no evidence that the earliest designers of these stands had this specific result in mind, however. They did what they did because it sounded better, and that was that.

At some indefinable point during the current decade, the speaker stand evolved into a true audio component. In other words, minute

details of its configuration, construction, materials, and finish became critical audiophile concerns. For instance, when Nakamichi briefly distributed a line of Mitsubishi monitor speakers in the U.S., users were directed to place them on a solid row of cinder blocks, even though they were more than large enough to qualify as floor-standers. The late (and much lamented) Etsuro Nakamichi was adamant about it. Nothing, but nothing, would serve as a substitute for the cinder blocks, and to place the speakers naked on the floor was folly.

Today, the format of high-end speaker stands has become somewhat codified. The majority of them are stand-alone pillars, hollow so as to accept fillings of sand or lead shot. Their bases are spiked to penetrate carpeting and make intimate contact with the floor—if they're not designed to be screwed right into it—and their tops incorporate various means to hold the speaker snugly in place. The usual application for such a stand is to support one of the finely crafted two-way systems now so popular with high-end enthusiasts, and the cost of a pair of them can come close to doubling a loudspeaker expenditure. What is the audio industry driving at anyway?

I hate to use the phrase again, but the universal justification for these stands, from those who favor them, is that they "sound better." Is there any reason why they should? Well, after consultation with numerous high-end manufacturers (whom I will not quote directly, because their opinions are not yet fully formed), a hazy picture emerges.

For some years audiophiles have been discovering sonic advantages in positioning speakers away from room boundaries (walls, floors, ceilings). This makes good sense. Interfering reflections from these surfaces are diminished in strength and delayed in time the farther away they are. However, a speaker brought out toward the middle of a room is denied the anchor of a sturdy shelf, and it will tend to be rocked around by the activity of its drivers. (Testers of early acoustic-suspension systems were amused to find that, with heavy bass inputs, the speakers would "walk" across a

room like a washing machine with an unbalanced load.)

Does it matter if speakers shake themselves around a bit? Well, here's where some controversy arises. Informed opinion (but not for attribution) has it that the worst effect would be dopplering of the tweeter output. Bass wavelengths are long, and a tiny bit of shakiness at the source shouldn't mean much. But the highest audio frequencies have wavelengths on the order of a half-inch or so, and spurious sidebands might conceivably be generated by a tweeter that doesn't stand still while it's working. One engineer even went so far as to say that concern about tweeter dopplering was probably responsible for some recent designs that put the tweeter at the bottom of the enclosure rather than the top. In a storm, the top of a ship's mast moves much more than the deck.

Considering all this, what you obviously want in a speaker stand is something extremely rigid, acoustically and physically inert (that probably translates to "heavy"), and

I hate to use the phrase again, but the universal justification for high-end loudspeaker stands, from those who favor them, is that they "sound better."

easy to vacuum under. Many of the new speaker stands clearly qualify. There is the troubling matter that most enthusiasts of high-end speaker stands exult in improvements in the bass rather than the treble, suggesting that the tight coupling to the floor they provide is somehow beneficial. That could be, although few floors are properly designed as surrogate woofer cones. However, it is a common effect that once you get a sound system's treble cleaned up, the bass also seems to improve wondrously.

At the moment, this is about all that can be said about high-end speaker stands, except that they "sound better." And in many rooms, in my experience, they really seem to do the trick. □



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