

Stereo Review

OCTOBER 1989 ● \$2.50

INCORPORATING HIGH FIDELITY

THE DIGITAL NINETIES

WHAT'S NEW
IN CD PLAYERS?

SPECIAL TEST REPORT:
SONY'S DIGITAL PREAMP

ALSO TESTED: SANSUI CD
PLAYER, JVC RECEIVER,
PHILIPS COMBI-PLAYER,
AND MORE...



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430492 BCH 8900Y091 741J JAN90



- Alabama**
Birmingham: Livus Audio
Dothan: Sight & Sound
Huntsville: Audio Video Lab
Mobile: Fidler Hi-Fi
- Alaska**
Anchorage: Pyramid Audio
Fairbanks: Hart's Stereo & Straps
Berkley: Honker's Sound Co., Inc.
Berkeley: Sounding Board
Burlington: Good Guys
Burlington: Kustom Hi-Fi
- Arizona**
Phoenix: Jerry's Audio
Tucson: Audio Emporium
Tucson: Jerry's Audio
- California**
Auburn: Sound and Vision
Capitola: Capriola Audio
Citrus Heights: Good Guys
Concord: Good Guys
Stockton: Sounding Board
Corte Madera: Good Guys
Daly City: Good Guys
Dublin: Good Guys
Emeryville: Good Guys
Encino: Sound Factor
- Fresno:** Bananas Valley Stereo
Glendale: Marcom Radio
Hayward: Good Guys
North Hollywood: Sound Factor
Palo Alto: Western Audio Imports
Pasadena: Sound Factor
Redondo Beach: Systems Design Group
Riverside: Speakercraft
Sacramento: Good Guys (Arden Way)
Sacramento: Good Guys (Stockton Blvd.)
San Diego: The Sound Company
San Francisco: Good Guys (20th Ave.)
San Francisco: Good Guys (Chestnut St.)
San Francisco: Good Guys (Van Ness)
San Jose: Century Stereo
San Jose: Good Guys (Blossom Hill)
San Jose: Good Guys (Stevens Creek Blvd.)
San Mateo: Century Stereo
San Mateo: Good Guys
Santa Barbara: California Audio Video
Santa Rosa: Good Guys
Stockton: Good Guys
Stockton: Guskins
Sunnyvale: Good Guys
Tarzana: Widon Audio Video
Ventura: Dexter's Camera & Hi-Fi
W. Los Angeles: Radioactive Sound
Walnut Creek: Sound Distinction
Westminster: Audio Today
Westminster: Videotek
- Colorado**
Boulder: Listen Up
Colorado Springs: Listen Up
Denver: Listen Up
Grand Junction: Sound Company
- Connecticut**
Brookfield: Sounds Incredible
Canton: Leser Superstores
Danbury: Sounds Alive
Norwich: Leser Superstores
Orange: Sounds Alive
Stamford: County Audio
- Delaware**
Wilmington: Bryn Mawr Stereo
- Florida**
Gainesville: Discount Audio (Edwards)
Key West: Audio Video International
Merritt Island: Cocoa, Southern Audio
Miami: Bransmart
Orlando: The Electronics Shop (Altamonte Square)
Orlando: The Electronics Shop (Fashion Square)
Orlando: The Electronic Shop (Florida Mall)
Stuart: World of Sound
West Palm Beach: World of Sound
- Georgia**
Athens: Hi-Fi Buys
Atlanta: Atlanta Soundworks
Atlanta: Hi-Fi Buys (Cobb Pkwy.)
Atlanta: Hi-Fi Buys (Peachtree Rd.)
Brunswick: Sound Advice
Macon: Stereo Warehouse
Norcross: Hi-Fi Buys
Savannah: Audio Warehouse
Tucker: Hi-Fi Buys
Valdosta: Stereo Connection
- Illinois**
Carbondale: Southern Stereo
Champaign: August Systems
Chicago: Belmont Electronics
Chicago: Martray Electronics
Chicago: Musicraft, Inc.
Evergreen Park: Musicraft, Inc.
Homewood: Musicraft, Inc.
Morris Grove: Musicraft, Inc.
Normal: Glen Poor's A/V Inc.
Oak Park: Musicraft, Inc.
Palatine: Musicraft, Inc.
Palos Hills: Gill Custom House
Rockford: Absolute Audio Sys
Villa Park: Musicraft, Inc.
- Indiana**
Bloomington: Campus Audio
Ft. Wayne: Lehman's
Indianapolis: Ovation Audio (38th St.)
Indianapolis: Ovation Audio (82nd St.)
Lafayette: Pro Audio
Muncie: Great Sounds
South Bend: Audio Specialists
Terre Haute: Stereo Crafters
Valparaiso: Audio Junction
- Iowa**
Ames: Stereo Sound Studio
Davenport: Audio Odyssey
Des Moines: Stereo Sound Studio
Iowa City: Hawkeye Audio
Marshalltown: John's Hi-Fi
Sioux City: Audio Visions
- Kansas**
Emporia: Audio Video Connection
Hays: Touch Feeling of Sound
Junction City: Audio Junction
Lawrence: University Audio
Overland Park: Accret Sound
Overland Park: Audio Electronics
Salina: Del's TV
Winchita: Audio Visions
- Kentucky**
Florence: Swallows
- Lexington, Ovation Audio**
Louisville: Sound Gallery
- Maine**
Ellsworth: Sound & Sight
- Maryland**
Annapolis: Midshipmen Store
Baltimore: Soundscape
Bethesda: Professional Products
Gaithersburg: Audio Buys
Owings Mills: Lightning Experiences
- Massachusetts**
Auburn: Leser Superstores
Belmont: Trolley Stereo
Braintree: Nantucket Sound
Frammingham: Lechmere
Frammingham: Natural Sound
Hyannis: Nantucket Sound
Pittsfield: Taylor d Sound
Seekonk: Leser Superstores
Shrewsbury: Leser Superstores
West Springfield: Sounds Great
Weymouth: Lechmere
Woburn: Lechmere
Worcester: O'Coons
- Michigan**
Ann Arbor: Hi-Fi Buys
Birmingham: The Gramophone
- East Lansing: Hi-Fi Buys**
Farmington: The Stereo Center
Grand Rapids: Stereo Showcase
Grosse Pointe: Pointe Electronics
Kalamazoo: Stereo Showcase
Perkasie: Kurtz Sound
Saginaw: The Court Street Listening Room
Stevensville: Soundwaves
Traverse City: Kurtz Sound
West Bloomfield: The Gramophone
- Minnesota**
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Minnetonka: Sound Center
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- Missouri**
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 - Omaha, Stereo West (132nd St.)
 - Omaha, Stereo West (Dodge St.)
- Nevada**
 - Las Vegas, Import Audio
 - Reno, Local Guys
 - Reno, High End Stereo
- NH Hampshire**
 - Manchester, Lechmere
 - Nashua, Lechmere
 - Portsmouth, State Street Discount
 - Salem, Lechmere
- New Jersey**
 - Berkeley, CSA
 - Deptford, Hi Fi Connection
 - Edmonton, High Tech Stereo
 - Flemington, Sight and Sound
 - Kinnelon, Sound City
 - Lawrenceville, Hal's Stereo
 - Manalapan, High Tech Stereo
 - Mazie Shade, Bryn Mawr Stereo
 - Morristown, Sight and Sound
 - New Brunswick, Hi Fi Haven
 - Northfield, Sound Inc.
 - Paramus, Leonard Radio
 - Upper Montclair, CSA
- New Mexico**
 - Albuquerque, West Coast Sound
 - Carlsbad, Decor of Carlsbad
- New York**
 - Albany, Lechmere
 - Albany, Mom's Music Systems
 - Bedford Hills, Sound Concept
 - Comstock, Sound Approach
 - Fredonia, Studio One
 - Fresh Meadows, Sound Stage Audio
 - Gosport, Long Player Stereo
 - Hicksville, Avtronics
 - Huntington, Performance A/V
 - Ithaca, Stella's Stereo
 - Jamestown, Studio One
 - Lynbrook, American Audiophile
 - Mamaroneck, Audio Experts
 - Mamassset, Audio Breakthrough
 - Merrick, Performance A/V
 - Nanuet, Sound Concept
 - New York City, Audio Breakthrough
 - New York City, Cosmopolitan Sound
 - New York City, Leonard Radio
 - New York City, Lyric Hi Fi (Lexington)
 - New York City, Lyric Hi Fi (Broadway)
 - New York City, Sound State Audio (40th St.)
- New York City, Sound State Audio (Broadway)**
 - New Hartford, Big Apple
 - Newburgh, Audio Expressions
 - Oneonta, Stereo Lab
 - Patchogue, Square Deal
 - Staten Island, Clone Audio
 - Syracuse, Sounds Great
 - White Plains, Lyric Hi Fi
 - Woodbury, Audio Breakthrough
 - Woodside, Leonard Radio
- North Carolina**
 - Asheville, Sound One
 - Boone, Holton's
 - Chapel Hill, Electronics Unlimited
 - Charlotte, Sound Audio
 - Conover, Tri City Electronics
 - Greenville, Todd's Stereo
 - Hickory, Tri City Electronics
 - High Point, Sound Source
- Ohio**
 - Akron, Golden Gramophone
 - Canton, Belden Audio
 - Cincinnati, Swallen's (Glenway Ave.)
 - Cincinnati, Swallen's (Princeton Plaza)
 - Cincinnati, Swallen's (Red Bank Road)
- Oklahoma**
 - Midwest City, Audio Midwest
 - Tulsa, Audio Advice
- Oregon**
 - Gresham, Progressive Audio
 - Klamath Falls, Andersch Home Furnishings
 - Medford, Progressive Audio
 - Portland, Fred's Sound of Music
- Pennsylvania**
 - Bethlehem, Carlton Audio
 - Bloomsburg, Pro Audio
 - Bryn Mawr, Bryn Mawr Stereo
 - Camp Hill, Hi Fi House
 - Erie, Studio One (Liberty St.)
 - Erie, Studio One (Peach St.)
 - Fraser, Bryn Mawr Stereo
- Cleveland, B&B Appliance**
 - Dublin, Audio Encounters
 - Heath, Threshold Audio
 - Lima, Hart Audio
 - Mars, Heidi, Swallen's
 - Middleburg Heights, B&B Appliance
 - Parma Heights, Ericsson Stereo
 - University Heights, Atlantis Home Entertainment
 - Warren, Maximum Hi Fi
 - Zanesville, Stereo Limited
- Greenburg, Pat's Stereo**
 - Harrisburg, Hi Fi House
 - Jenkintown, Bryn Mawr Stereo
 - King of Prussia, Bryn Mawr Stereo
 - Lamp Hill, Bryn Mawr Stereo
 - Lancaster, G W T Stereo
 - Louisburg, M & M Stereo
 - Montgomeryville, Bryn Mawr Stereo
 - Natrona Heights, Stereo Land
 - Philadelphia, Bryn Mawr Stereo (Cottman Ave.)
 - Philadelphia, Bryn Mawr Stereo (Cheshnut St.)
 - Pittsburg, Audio Junction
 - Quakertown, Bryn Mawr Stereo
 - State College, Paul & Tony's Stereo
 - Throop, Shehadi Brothers
 - Washington, Stereo Outlet
 - Whitehall, Bryn Mawr Stereo
- Rhode Island**
 - Cumberland, Sounds Unlimited
 - Providence, Sounds Unlimited
 - Warwick, Leiser Superstores
 - Westerly, Leiser Superstores
- South Carolina**
 - Charleston, Audio Warehouse
 - Columbia, Laser Experience
- Greensburg, Pat's Stereo**
 - Harrisburg, Hi Fi House
 - Jenkintown, Bryn Mawr Stereo
 - King of Prussia, Bryn Mawr Stereo
 - Lamp Hill, Bryn Mawr Stereo
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- Hilton Head, Gramophone**
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 - Houston, Groove Audio Video
 - Houston, Sheffield Audio
- Utah**
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 - Ogden, Hi-Fi Shop
 - Salt Lake City, Audio Works
- Vermont**
 - Essex Junction, I.E.S.
 - Rutland, Sound Directions
- Virginia**
 - Falls Church, Audio Buys
- Harrisburg, Ace Music 'N Electronics**
 - Manassas, Audio Buys
 - Roanoke, Lee Hartman & Sons
- Washington**
 - Olympia, Desco Audio & Video
 - Seattle, Definitive Audio
 - Seattle, Magnolia Hi-Fi
 - Tacoma, Magnolia Hi-Fi
- West Virginia**
 - Huntington, Pled Piper
- Wisconsin**
 - Appleton, American of Appleton
 - Brown Deer, American TV
 - Eau Claire, Elite Audio
 - Green Bay, Hi Fi Heaven
 - La Crosse, Sound World
 - Madison, American TV
 - Oak Creek, American TV
 - Waukesha, American TV
 - Wausau, Team Electronics
 - Wisconsin Rapids, Salon One Ltd
- Wyoming**
 - Sheridan, Star Video & Audio



Loudspeakers. Our Platinum Editions feature 60-inch full-range dipolar ribbons and four 12-inch dynamic subwoofers per speaker. The Silver Edition has 48-inch ribbons and three 12-inch subwoofers in each slim, trapezoidal panel.

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Visit one of the dealers listed above soon.

You can get a lifetime of musical enjoyment from a pair of Amazing Loudspeakers.

But you can *only* get a free compact disc if you visit a Carver dealer between now and November 30th, 1989.

All Free CD Vouchers must be properly validated by store personnel and postmarked by 10 30 89. Allow 4-6 weeks for delivery of CD. Limit, one per customer. Free information booklet subject to supply on hand. Offer good only at Carver dealer locations listed in this ad.



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Stereo Review

SPECIAL MESSAGE FROM THE PUBLISHER

All of us at *STEREO REVIEW* wish to extend a warm welcome to the newest members of our growing family, the readers of HIGH FIDELITY.

We are happy to report that subscribers to HIGH FIDELITY will continue to receive *STEREO REVIEW* for the full duration of your subscription. Again, we also set up a special customer toll-free hotline to answer any questions you may have during this transition. Just call 1-800-525-0643.

I believe this is also an opportune time to thank the devoted editors and readers of *STEREO REVIEW* who have made the magazine the world's most authoritative and widely-read hi-fi publication. To all our readers, new and old, *STEREO REVIEW* is committed to providing uncompromising editorial excellence that you deserve. I know you will continue to enjoy in-depth coverage of the most exciting audio and video products from the largest and most qualified editorial staff.

Again, we believe that when readers get more out of a magazine, so do advertisers.

Sincerely,



Winston A. Johnson
Vice President/Publisher

Stereo Review

Incorporating High Fidelity®

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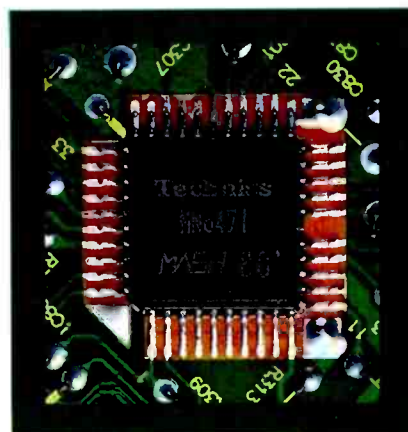
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Cover: Forerunners of the digital Nineties include Sony's digital preamplifier (see test report on page 90), Harman Kardon's HD7600 CD player with 1-bit conversion (see "Digital Update," page 95), and Sansui's Vintage B-2102 power amplifier, which can handle a direct input from any CD player. Design by Sue Llewellyn, photo by Robert Butler.

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by Louise Boundas



It's a Deal

IN April 1986, we reported that "a rotary-head digital audio tape recorder prototype was shown behind closed doors by Onkyo [at the January Consumer Electronics Show], but you probably won't be able to buy one much before the end of the year." You couldn't.

The first DAT decks were sold in Japan in March 1987, by Aiwa. That same month, a STEREO REVIEW article about DAT predicted, "The first machines will appear in [U.S.] shops sometime in 1987." They didn't.

The next year, 1988, was the year of the CBS Copycode flap. At the request of Congress, which was considering legislation requiring it, the National Bureau of Standards tested the copy-prevention system and found it wanting. It died.

Meanwhile, some retailers began buying the machines in Japan and selling them here on the "gray market," bypassing manufacturers' distribution networks. But, despite demonstrated performance advantages over conventional analog tape, DAT has not been doing well.

Digital tape recorders are expensive, and even if you came up with \$1,500 or so to buy one, you'd still have to fork out around \$10 for every blank tape. Moreover, there are very few prerecorded digital

tapes out there—so few, in fact, that in August the Schwann catalog stopped listing them, citing a lack of interest. Cost and limited availability of recordings go a long way toward explaining why sales of DAT recorders have been disappointing in Japan and Europe, too.

All these false starts and non-events and political maneuvers have made people in the consumer electronics industry and the press wary about when to expect the *real* advent of DAT in the U.S. So when the Electronic Industries Association and the Recording Industry Association of America announced in July that they had reached an agreement to support legislation for a new consumer DAT system, the reaction was somewhat more skeptical than it might have been a couple of years ago.

But it is a beginning. The very fact that these two groups have come to any agreement at all is encouraging. And, apart from misgivings some of us may have about government regulation in the area of home taping, the legislation the EIA and the RIAA agreed to support would benefit consumers. For one thing, the new DAT recorders, unlike the current ones, would permit digital-to-digital recording of CD's. And with one of those decks, you could make as many copies of a CD or prerecorded DAT as you wanted to.

In requiring a "Serial Copy Management System," however, the legislation would restrict digital copies of the copies. If you wanted to make two digital copies of a CD, one for your car and one for your portable player, you would have to tape both of them from the CD; you could not make one tape and copy it onto another. Unlike the discredited Copycode system, SCMS requires no tampering with the original recording, no "frequency notch."

If the agreement opens up the U.S. market for DAT so that more decks can be sold so that prices can come down so that major record companies see and fill a demand for digital tape recordings so that more people will buy DAT decks . . . well, maybe we've got something here. Don't expect to get one of those new DAT recorders for Christmas, though. Not this year. □

Stereo Review

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SONY®



THE
DIGITAL
DOMAIN
SHOULDN'T
END HERE.



INTRODUCING SONY DIGITAL SIGNAL PROCESSING

Consider the digital PCM processor. The digital Compact Disc player. The digital audio tape (DAT) recorder. Each of these products has come to represent an important milestone in digital audio. And in creating each of these concepts, throughout the past decade, one company has led the way from the very beginning:

Sony.

Yet despite the superb sonic quality inherent in each of these digital source components, all of these products are still subject to various forms of sonic degradation caused by analog processing employed throughout the high fidelity system. In general, these analog circuits tend to increase distortion and phase shift, as well as impair overall stereo imaging. All of which can affect the final quality of the reproduced signal.

Recently, Sony digital engineers discovered a way to process the *entire signal* in the digital domain. Now for the first time, numerous musical enhancements can be realized—without compromising the integrity of the original digital signal. This remarkable achievement is due to an important new development: Sony Digital Signal Processing.

Technically, of course, all Compact Disc Players incorporate some form of digital signal processing. But until now, the term “digital signal processing” (or DSP), has been primarily used to describe the various types of surround sound and ambience decoders currently available.

Now the meaning of “DSP” will change, due to the development of two new Sony proprietary digital LSIs. Originally created for use in professional recording studios, DSP technology as envisioned by Sony allows for precision control of a wide range of signal processing parameters:

- Bass and treble control
- Parametric or graphic equalization
- Subsonic or ultrasonic filtering
- Reverberation and delay
- Surround sound (including Dolby Surround™)
- Compression and expansion

In addition, Sony Digital Signal Processing employs open system architecture, which offers a nearly endless array of signal processing possibilities. In fact, the specific DSP feature of a given Sony high fidelity product is only limited by that particular product engineer's choice of programming software.

Finally, by incorporating random access memory devices into certain products, Sony DSP technology can increase a component's overall flexibility by providing a wide range of automated features and programming functions.

With Sony DSP technology, the products described here represent only the beginning. Already DSP is being considered for automotive and video use. And an entire range of new product concepts are being planned for the future.

Digital Signal Processing. What else would you expect from Sony—The Leader in Digital Audio™.



Sony SDP-505ES, the first digital Dolby Surround™ decoder.

THE BENEFITS OF DIGITAL SIGNAL PROCESSING

Significantly, the benefits of Sony Digital Signal Processing are almost as numerous as the chip parameters themselves. These include greater signal-to-noise performance; lower total harmonic distortion; less phase shift, for improved stereo imaging; plus a reduction in component parts for greater overall reliability. And in portable products, Sony DSP technology consumes only half the power of conventional analog processing circuitry for more efficient operation.

Consider the possibilities with Sony Digital Signal Processing. You can decode and process any digital music source directly, without affecting the integrity of the music as it was originally encoded.

Or give new life to your analog records and tapes by first converting the music to the digital domain, then equalizing or dynamically expanding the music without increasing distortion.

Or optimize music via digital compression or bass boost, for either car stereo or portable listening enjoyment.

And with the addition of a simple memory circuit, you can even program these parameters into numerous acoustic soundfield environments, for later recall at the touch of a button.

ADVANCED SONY DIGITAL TECHNOLOGY

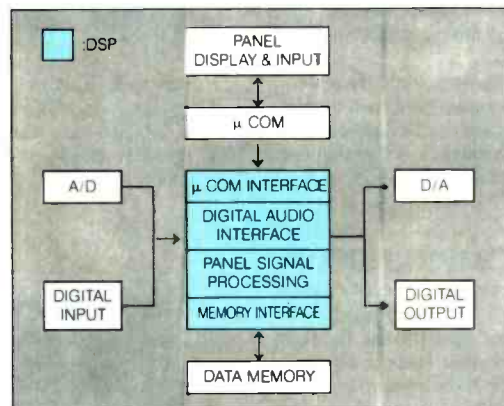
All of these important benefits are made possible by the creation of two Sony proprietary DSP integrated circuits.

The CXD-1160 is a CMOS integrated circuit that operates as the "heart" of the system. In reality an extremely sophisticated digital filter, the 1160 calculates internally at 32 bits. It is designed to handle all DSP equalizing, tone, filter and compression/expansion functions.

The CXD-1355Q is a CMOS LSI that is used mainly for digital time delay, reverb and surround sound effects. It incorporates an 8X oversampling digital filter with Noise Shaping plus a digital attenuator and interface. The 1355Q calculates in 18 bit word lengths and, like the CXD-1160, accepts data from any digital source

that samples at either a 44.1, 48 or a 32 kHz frequency rate.

These two Sony LSIs are configured as shown, along with numerous other digital operating stages. Working in tandem, they offer performance that is significantly better than conventional analog processing components.



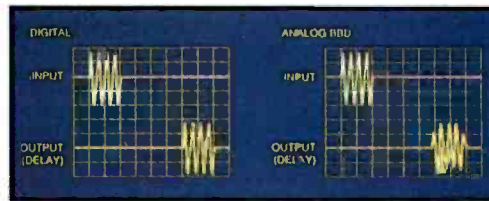
SONY DIGITAL SIGNAL PROCESSING PARAMETERS

DIGITAL DELAY

Sony DSP circuitry can be utilized for time delay quite easily, since the delay characteristics remain stable in both the decay and level modes. DSP delay also exhibits superior transient response and dynamic range performance compared with conventional analog circuitry. For example, when DSP delay is utilized, both input and output transient response is identical. But when an analog BBD delay device is employed, the output signal is badly misaligned.

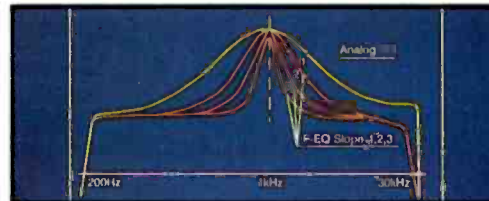
Also note the spectrum analysis of a 1 kHz signal versus noise. When analog processing is employed, additional spurious noise is generated. However, in the DSP processing mode, there is remarkably little spurious noise present.

For increased flexibility, DSP delay adjustments can be made more precisely, in order to achieve more ideal filter and reverberation characteristics.



DIGITAL EQUALIZATION

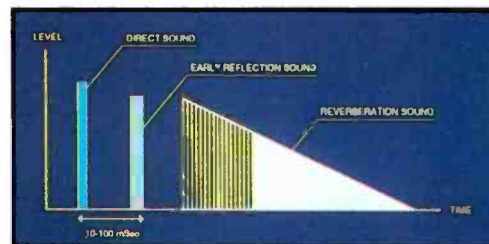
Using Sony Digital Signal Processing for equalization is also possible. In this example, notice how the reproduction of a 1 kHz signal is slightly skewed when using a conventional analog equalizer. But utilizing Sony Digital Signal Processing circuitry in the equalization stage allows for more accurate frequency reproduction, as well as greater slope adjustment range.



DIGITAL REVERBERATION

The combining of primary, direct sound with various delay and reverberation characteristics is one of the key features of Sony DSP circuitry. A soundfield is made up of three main elements—direct sound, early reflection sound and reverberation. The direct sound gives us content and impact, while the delayed sound gives cues for direction and localization. Reverberation provides a sense of spaciality and imaging. All of these factors are present in music reproduction and help to properly define the subjective listening experience.

During studio recording, some of the reverberation and ambience associated with the original recording session can be displaced. Using Sony DSP technology, much of the life-like realism associated with live music can be

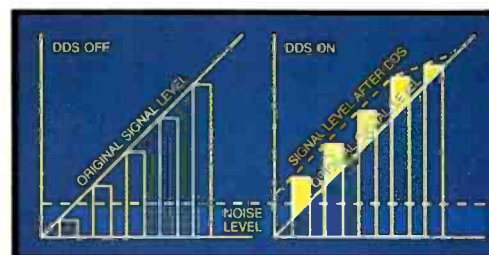


restored. In addition, the user can recreate a wide variety of listening environments when DSP circuitry is combined with an outboard memory device and its related programming options.

DIGITAL COMPRESSION

Finally, the dynamic characteristics of a musical signal can play a major role in defining the overall quality of music reproduction. For example, given the wide dynamic range of digital source materials, some of the music may be masked by ambient room noise present under certain playback conditions.

Using Sony Digital Signal Processing to digitally compress the signal allows more music to be heard above the ambient noise floor, without the problems of phase distortion and overload associated with typical analog processing components.



SONY DIGITAL SIGNAL PROCESSING COMPONENTS

The new **STR-D2010** is a full-function, A/V stereo receiver with complete digital signal processing control. Now, for the first time, you can tailor your music with unprecedented clarity and precision.

With 130 watts per channel*, the STR-D2010 can drive even moderately efficient speakers to impressive levels. There's also a built-in 15 watt per channel rear channel amplifier, for use with the latest video surround sources. In addition, the D2010 offers impressive control flexibility, since its numerous inputs can encompass a complete range of analog audio, video and digital source components.

For ease of use, the STR-D2010 includes an electronic cursor keypad for key DSP functions, as well as 5 memory presets that can store different digitally-generated soundfield environments. There's even an "auto-demonstration" mode, to familiarize the user with all DSP operation controls.

- **Digital Decoding of any digital music source that samples at either a 32, 44.1, or 48 kHz frequency rate.**



- **Digital Encoding** converts incoming analog signals to 48 kHz, 16 bit digital audio.
- **Digital Parametric Equalization** allows you to set or program center frequencies and bandwidth (with variable Q).
- **Digital Dynamic Compression** can be used when listening to music under high ambient noise.
- **Digital Reverberation and Delay**, fully adjustable between 0.1 and 9.9 seconds; in 0.1 second steps.
- **Digital Dolby® Surround** incorporates the complete Dolby filter, matrix and noise reduction circuit in the digital domain.

The new **D-555 Discman®** CD player is the world's first compact disc player to offer Sony's proprietary digital signal processing technology. Now music enthusiasts can enjoy traditional Discman versatility, with digital signal processing control to virtually eliminate the noise, distortion and high power consumption often associated with conventional portable CD player designs.

The D-555 is also the first portable CD player to incorporate an 8X oversampling digital filter and noise shaping circuit, along with dual D/A converters. This results in perhaps the most musically accurate music reproduction available from a portable CD player today.

The D-555 also includes a DSP "auto-demonstration" mode that automatically demonstrates its various operating functions. An optical output port even allows for direct digital interface between the D-555 and the STR-D2010 receiver or other digital signal processing components.



- **Digital Bass Boost** can be provided below 80 Hz, for optimizing headphone bass response.
- **Digital Graphic Equalization** allows you to equalize playback response at five frequency points.
- **Digital Surround** mixes left minus right (L-R) channel information, to achieve various ambient enhancements.
- **Digital Dynamic Compression** is provided for listening to music under high ambient noise conditions, in the car environment.



THE EXPERTS ON SONY DIGITAL SIGNAL PROCESSING

“...In the same way that the CD player surmounted the stubborn limitations of analog music storage DSP components will solve many of the problems of analog processing...(and) will expand the horizons and functions of high fidelity systems...”

Ken Pohlmann—*STEREO REVIEW* (May 1989)

“...Any analog-domain manipulation of the audio signals—equalization (tone controls) and dynamic range modification (compression/expansion), to name two—can be performed better in the digital domain...”

Dan Kumin—*CD REVIEW* (August 1989)

“...Leave it to Sony, one of the acknowledged leaders in both professional and consumer digital audio products, to come up with DSP chips specialized for audio applications, as well as to establish both professional and consumer-priced product lines using them...”

David Ranada—*HIGH FIDELITY* (March 1989)

“...In time, this introduction may be looked back upon as having been as important as the introduction of the first transistorized consumer electronics product...”

Len Feldman—*TWICE* (January 1989)

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For further information regarding Sony DSP, write for a technical white paper to: Sony Corporation of America, Sony Drive, Mail Drop 3-37, Park Ridge, NJ 07656, Attn: Hi-Fi Training Dept.
*8 ohms, both channels 20-20kHz.

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BULLETIN

by Christie Barter
and Rebecca Day

RIAA GOLD

Albums recently certified Gold by the Recording Industry Association of America include Warrant's "Dirty Rotten Filthy Stinking Wretch" (Columbia), Take 6's "Take 6" (Reprise), 10,000 Maniacs' "Blind Man's Zoo" (Elektra), Stevie Nicks's "The Other Side of the Mirror" (Modern), and Roy Orbison's "In Dreams: Greatest Hits" (Virgin).

PRODUCT NEWS

Radio Shack's 1990 consumer catalog, which features 2,956 products, is now available free from any of Radio Shack's 7,000 retail outlets. Featured in the catalog is the company's new Optimus line of audio components. . . . Yamaha's Active Servo Technology now goes under the abbreviation YST because of conflict with a New York-based company over the use of the AST name. . . . Under the GE brand name Thomson Consumer Electronics has begun test marketing a new line of audio tape. . . . Matsushita will supply Japan Air Lines with digital audio tape players for entertainment systems in twelve of its jets. . . . Eveready has introduced a 1-hour rechargeable battery system called the Generator. The AA version lists for \$39.99, and a combined system for AA, C, and D batteries has a list price of \$49.99. . . . Taiyo Yuden has formed a joint venture with Sony to produce recordable CD's and CD recorders for commercial applications. Current plans do not call for a consumer version of the system.

FAVORITE TAPE SELECTION

A new compilation-tape recording system in record stores in New York and California enables customers to create 90-minute tapes of their favorite music. Developed by the California-based Personics Corp., the system transfers up to twenty-five songs to a 90-minute TDK SA tape in just 5 to 10

minutes. More than 4,000 songs from a variety of music categories and record labels are available now, and the catalog could be expanded to as many as 15,000 titles. The price of a custom tape is determined on a per-song basis, ranging from 50¢ to \$1.50 each (including royalties to the copyright holders); there's no additional charge for the cassette. Personics plans to have more than a thousand systems in operation throughout the country by the end of next year.

RECORD COMPANY NEWS

Banished to the doghouse a few years ago by RCA Records, Nipper (the famous trademark dog listening to his master's voice) is being restored to all RCA Victor and Red Seal labels. Coming from RCA this month is the soundtrack for director Jim Jarmusch's new movie *Mystery Train*, featuring music by Elvis Presley and other Stax and Sun Records artists, with cameo appearances by Screaming Jay Hawkins and Tom Waits. Also from RCA is "Innervoces" with singer Judy Collins and classical clarinetist Richard Stoltzman.

Two new opera recordings are due from Deutsche Grammophon in October: Mozart's *Così fan tutte* with Kiri Te Kanawa conducted by James Levine and Wagner's *Tannhäuser* with Plácido Domingo conducted by Giuseppe Sinopoli. Domingo sings Puccini songs in "The Unknown Puccini," a new CBS release that includes five world-première recordings. Also from CBS is "Paganini Caprices" played by the young violinist Midori, who is scheduled to appear on *The Tonight Show* on October 13. Cellist Yo-Yo Ma and eighty-one-year-old French jazz violinist Stéphane Grappelli play Cole Porter songs in another CBS October release, "Anything Goes."

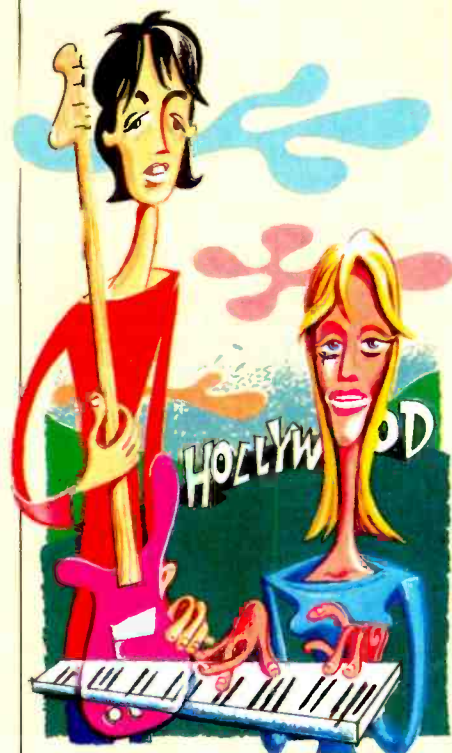
WORTH VIDEOTAPING

Tune in to PBS this month and hook up your VCR. October 16: On Stage at Wolf Trap, "Piano Pizzazz" featuring Ellis Marsalis, Carmen McRae, Peter Nero, the

Paratore Brothers, and Roger Williams. October 23: "The Karajan Legend," a survey of the life and work of the late great Austrian conductor Herbert von Karajan. October 25: Live from Lincoln Center, Mozart's *Don Giovanni* at the New York City Opera, a new production by Harold Prince. October 27: Jerome Kern's *Show Boat* on stage at the Paper Mill Playhouse. Check local listings.

THE MCCARTNEY TOUR

The U.S. segment of Paul McCartney's current world tour will kick off in Los Angeles around Thanksgiving time. The tour, McCartney's first in thirteen years, begins in Oslo on September 26 and continues on the Continent through November 8. Programs are said to include some of the former Beatle's favorite early rock hits as well as the expected numbers from his Wings and various solo albums, including the latest, "Flowers in the Dirt." Accompanying him are members of the band on those sessions, headed by Robbie McIntosh on lead guitar and Linda McCartney on keyboards.



MARK FALLS

LETTERS

Noise Reduction

In Ken C. Pohlmann's "Signals" column in August about the new Dolby S noise-reduction system, he stated that Dolby C-encoded cassettes need decoding with Dolby C to sound good. In theory this may be true, but in the real world Dolby C cassettes decoded with Dolby B sound *better* than Dolby B cassettes decoded with Dolby B, especially in car stereo systems. This scheme yields better high-frequency response by compensating for head misalignment or losses from excess recording bias.

ROBERT B. MUGRDECHIAN
Palisades Park, NJ

From "Signals" in August: "Dolby C was introduced as a hedge against CD and DAT." I remember reading about Dolby C in *Popular Electronics*, a magazine probably long extinct when CD's became widespread and certainly forgotten by the time DAT was introduced. Also, why no mention of dbx noise reduction? The dbx system is an excellent alternative to Dolby C and maybe even to Dolby S.

MICHAEL BURKMAN
Waterbury, CT

Ken Pohlmann replies: Yes, in practice you can play back a Dolby C-encoded cassette with Dolby B processing, but the engineers who worked long and hard to perfect these technologies feel very depressed when they see people do that. Yes, Dolby C was introduced well before the CD and DAT formats were, but Dolby Labs and others certainly knew that some kind of digital recording and playback system was in the offing; thus, Dolby C was a "hedge" to keep analog tape media viable. The lack of widespread support for Dolby C has limited its success, and the same is true of the dbx system, which certainly is an alternative.

Allison AL 120 Speaker

Julian Hirsch's test report in September on our Allison AL 120 speaker does not, I believe, describe its performance accurately—perhaps because we didn't supply enough information to him.

For one thing, Mr. Hirsch assumed that both woofers operate over the whole woofer range. They do not. They are equal in output up to 150 Hz, and then the drive to the inverted woofer is rolled off: at 500 Hz it is at -8 dB and at 2,000 Hz -15 dB with respect to the upper woofer. A microphone placed midway between the woofers is not close enough to either of them to give meaningful near-field data at 700 Hz, where Mr. Hirsch found a notch. That was an artifact of the measurement, I am certain, and I respectfully suggest

that it does not appear in the far field. I can find no trace of it there.

The second matter in question is that of impedance. I have yet to find an AL 120 with a minimum of less than 3.3 ohms. Most have minima of 3.4 or 3.5 ohms. The average impedance over the frequency range is a lot closer to 6 ohms than to 4 ohms, and I think that the way we rate the speaker—6 ohms nominal, 3.5 ohms minimum—is reasonable.

For the third criticism in the report, a bright sound, I take responsibility. The speaker's room-placement recommendations were inadvertently combined with those for another line (the LC Series), which should be kept away from room walls for optimal balance. AL Series speakers are designed for placement close to a wall. When they are so positioned, the brightness Mr. Hirsch commented on disappears because a proper bass balance cancels it.

ROY ALLISON
President, Allison Acoustics
Framingham, MA

Lighter Speaker Grilles

In the August "Systems," pages 64 and 65, there are photographs of four rooms crying out for light-colored speaker-grille fabric. The decorators who designed these rooms tried to minimize the speakers by adding some black as an accent color, with only partial success. Why is it so difficult for speaker manufacturers to offer the lighter look when so many people prefer it?

Many companies are now offering complete home systems. The hardware can easily be fitted into furnishings, old or new, so it does not detract from the room's look. Insisting on black speaker grilles is insulting to consumers who care about design.

BJ BOLAND
Reading, MA

Unbearable

Ahem. With regard to the review in August of the Seiji Ozawa recording of *Elektra*, I know of only one opera with a bear, and that's *Siegfried* (though I wouldn't be surprised to find an uncredited walk-on in *The Bartered Bride* or *Schwanda the Bagpiper*). The word is *grisly*, not *grizzly*!

WILLIAM SOMMERWERCK
Bellevue, WA

Dion Fan

Having always believed music is a highly personal item not subject to someone else's likes and dislikes, I hate to admit I have read a review. Nevertheless, I did read the review in your August issue on Dion's new album, "Yo

Frankie." I refuse to mention the name of the jerk who wrote the review.

When I first put this disc on I couldn't believe how good it was. When I heard *Drive All Night* I knew what John Fogerty was talking about when he said after hearing a certain song that he could have died right then and felt he had lived a full life.

M. J. SHIPLEY
Grand Prairie, TX

NRA Protests

I have subscribed to STEREO REVIEW for many years because one of my major interests is music. I have also been a life member of the National Rifle Association (NRA) for many years because of my interest in and ownership of firearms. Therefore, I was not pleased to read Parke Puterbaugh's anti-NRA review of Peter Case's latest album in your August issue.

JOHN M. SOLAN
Smithmill, PA

I get enough gun-prohibitionist pap from the general media without having more rammed down my throat by a publication I trust for equipment and record reviews.

CRAIG V. PAHIGIAN
Auburn, NH

More on CD Labels

I have found no way to mark CD's that does not interfere with their operation. Where can I apply a label? Could I scratch a number onto the disc?

WALTER B. MOSES, JR.
New Orleans, LA

Regarding the labeling of CD's: You should be able to engrave something on the clear center area of the disc.

ROBERT SAYRE
Fresno, CA

Senior Editor Rebecca Day replies: Engraving a catalog number on the clear center area could work, but you'd have to be very careful not to slip and cut into the information layer. By late October or early November, a company called Hi-Pro-Tech will be selling a CD identification system called Identadisc. The system uses pressure and a custom-embossed metal ring to imprint a code permanently on the inner, gripping area of a disc, away from the reflective aluminum information layer. The suggested retail price is \$49.95, which includes the Identadisc unit, warning labels for CD boxes, car windows, and stereo systems, and automatic registration in a national reporting and checking system. The company's address is Hi-Pro-Tech, P.O. Box 1357, Lansdale, PA 19446. □

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Kevin Eubanks: The Searcher • The Story Teller, etc. GRP Digital 01007

R.E.M.: Green • Stand, Orange Crush, etc. Warner Bros. 00715

The Cowboy Junkies: The Trinity Session Sweet Jane, etc. RCA 01043

Paula Abdul: Forever Your Girl • Straight Up, etc. Virgin 00933

Kenny G: Silhouette Tradewinds, title song, etc. Arista 00603

Reich, Different Trains/ Electric Counterpoint Nonesuch Digital 01013

Bobby Brown: Don't Be Cruel • My Pre-rogative, Roni, etc. MCA 00621

The Sun Story: Elvis, Roy Orbison, Jerry Lee Lewis, others. Rhino 44534

Debbie Gibson: Electric Youth • Lost In Your Eyes, etc. Atlantic 00827

Edie Brickell...: Shooting Rubber Bands... • What I Am, etc. Geffen 00789

Elvis Costello: Spike • Veronica... This Town... etc. Warner Bros. 00841

Peter Pan/Original Cast: Never Never Land, I'm Flying, etc. RCA 44102

Whitney Houston: Whitney • Where Do Broken Hearts Go, etc. Arista 52854

Milli Vanilli: Girl You Know It's True Title song, etc. Arista 01048

20 Million Dollar Memories: The Everly Brothers: Bye Bye Love, etc. Laurie 20773
The Jazz Album: London Sinfonietta & others/Rattle. Angel Digital 72226

Hank Williams, Jr.: Greatest Hits III There's A Tear In My Beer, etc. Warner/Curb 00840

Pops In Space: Music from Superman, Close Encounters, etc. Philips Dig. 05392

Steve Winwood: Roll With It • Holding On, etc. Virgin 54633

Enya: Watermark Orinoco Flow (Sail Away), etc. Geffen 01041

New Order: Technique Fine Time, All The Way, etc. Qwest 00938

Bon Jovi: New Jersey • Bad Medicine, Your Hands On Me, etc. Mercury 00516

Cocktail (Original Soundtrack) Don't Worry Be Happy, more. Elektra 00459

Dire Straits: Money For Nothing • Sultans Of Swing, etc. Warner Bros. 00713

Vladimir Horowitz Plays Mozart: Concerto No. 23, Sonata No. 13, DG Digital 15436

Bette Midler: Beaches/Original Soundtrack • I Know You By Heart, etc. Atlantic 00793

Melissa Etheridge: Like The Way I Do, Similar Features, more. Island 60352

Rimsky-Korsakov, Scheherazade Vienna Phil./Previn Philips Dig. 15415

Richard Marx: Repeat Offender Satisfied, Angelia, etc. EMI 01118

Tchaikovsky, 1812 Overture: Romeo And Juliet; Nutcracker Suite • London Digital 25179

Maynard Ferguson: High Voltage II • King Kan, more. Intima Digital 01002

Roy Orbison: Mystery Girl • You Got It In The Real World, more. Virgin 00842

Andrés Segovia Plays Bach: Three Pieces for Lute, more. MCA 63600

Madonna: Like A Prayer • Title smash, Express Yourself, etc. Sire 01029

Lyle Lovett And His Large Band: Stand By Your Man, etc. MCA/Curb 00932

Rick Astley: Hold Me In Your Arms Giving Up On Love, etc. RCA 006E4

Barbara Cook: The Disney Album Some Day My Prince Will Come, etc. MCA Digital 00854

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Jody Watley: Larger Than Life • Real Love, Friends, etc. MCA 01104
John Cougar Mellencamp: The Lonesome Jubilee • Mercury 34420
Liazztronic: Jeffrey Baker, synthesizer. Newport Classic Digital 34622
Robert Palmer: Heavy Nova • Simply Irresistible, etc. EMI 00035
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Holst, The Planets • Montreal Symphony/Dutoit. London Digital 15448
Adams, The Chairman Dances • San Fran. Sym./deWaar. Nonesuch Digital 00491

The Replacements: Don't Tell A Soul I'll Be You, etc. Sire 01024

Eagles: Their Greatest Hits 1971-1975 Take It To The Limit, etc. Asylum 23481

Ute Lemper Sings Kurt Weill • Mack The Knife, more. London 15163

Carole King: City Streets • Legacy, others. Capitol 01099

Joe Sample: Spellbound • Seven Years Of Good Luck, etc. Warner Bros. 00847

Glenn Miller Orch.: In The Digital Mood In The Mood, etc. GRP Digital 43293

ZZ Top: Afterburner • Sleeping Bag, etc. Warner Bros. 84042

Tracy Chapman • Fast Car, Talkin' Bout A Revolution, etc. Elektra 53582

Animotion • Room To Move, Send It Over, Calling It Love, more. Polydor 01091

Sidewinders: Witchdoctor • Cigarette, Bad, Crazy Sun, more. RCA 01075

Simon & Garfunkel: The Concert In Central Park • Warner Bros. 44006

Jazz CD Sampler • Ella, Armstrong, Getz, Basie, more. Polygram 73406

Dave Grusin: Cinematic • An Actor's Life, On Golden Pond, etc. GRP Digital 33316

Allman Bros. Band: Eat A Peach • Ain't Wastin' Time No More, etc. Polydor 63353

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Diana Ross: 20 Gt. Hits	63867
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Squeeze: 14 Classics	00601
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NEW PRODUCTS

HARMAN KARDON

Harman Kardon's HD7400 compact disc player features improved error-correction circuitry, four-times oversampling, and 18-bit linear digital-to-analog converters. All the analog circuits are isolated from the digital ones to prevent noise, and separate power supplies are used for the mechanical, digital, and analog stages for additional isolation. A nineteen-key remote control is included. Price: \$349. Harman Kardon, Dept. SR, 240 Crossways Park West, Woodbury, NY 11797.

Circle 120 on reader service card



SONY

Sony has added two new tapes, Metal Master and Metal-SR, to its metal-tape cassette line, which previously offered only Metal-ES. Metal Master cassettes are designed to extend analog recording performance to a level near that of digital recording. The tape itself uses ultra-fine Extralloy particles, and the cassette shells are made of a ceramic composite that is said to dampen external vibrations and reduce modulation noise. Metal-SR cassettes use new fine Dynametal particles to reduce bias noise and distortion. A special dispersion-control system is claimed to insure the highest possible packing density. Prices: Metal Master C-90, \$11.99; Metal-SR C-90, \$3.99, C-100, \$4.49. Sony, Dept. SR, Sony Dr., Park Ridge, NJ 07656.

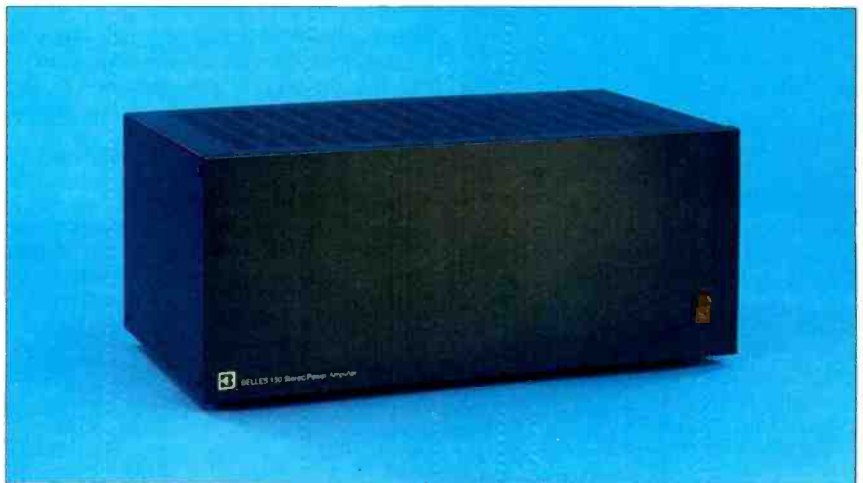
Circle 121 on reader service card

BELLES RESEARCH

The Belles Research Model 150 solid-state stereo power amplifier is rated to deliver 100 watts per channel continuous output into 8 ohms from 20 to 20,000 Hz with no more than 0.09 percent distortion or 150 watts per channel into 4 ohms. Peak power is rated as 120 watts per channel into 8 ohms, 185 watts into 4 ohms; peak current is more than 75 amperes. The Model 150 has one circuit board onto which all compo-

nents are mounted, including Tiffany input connectors, gold-plated binding posts, and an integral power supply, and it uses complementary Class AB circuitry, a 500-VA toroidal transformer, polypropylene capacitors, and 1-percent metal-film resistors. It comes with a three-year warranty. Price: \$595. Belles Research, Dept. SR, 1237 E. Main St., Rochester, NY 14609.

Circle 122 on reader service card



SHERWOOD

The Sherwood CDM-1260R is a six-disc CD changer. It has a four-times-oversampling digital filter, dual digital-to-analog converters, thirty-two-track programming, and a remote control. Total harmonic distortion is rated as 0.01 percent, signal-to-noise ratio as 90 dB, and frequency response as 20 to 20,000 Hz \pm 2 dB. Price: \$299.95. Sherwood, Dept. SR, 13845 Artesia Blvd., Cerritos, CA 90701.

Circle 123 on reader service card

NEW PRODUCTS

JBL

JBL's three-way L100t3 speaker has a 12-inch Aquaplas woofer, a 5-inch high-polymer-laminate midrange, and a 1-inch titanium-dome tweeter. The voice coil is formed from flat copper wire that is edge-wound to pack the maximum wire into the voice-coil gap; this is said to provide better transient response and power handling than a conventional voice coil. Nominal impedance is 8 ohms, and frequency response is rated as 35 to 37,000 Hz \pm 6 dB. Sensitivity is rated as 91 dB at 1 meter with a 1-watt input. The L100t3 measures 14½ x 36¼ x 15¾ inches. Price: \$625 each. JBL, Dept. SR, 240 Crossways Park West, Woodbury, NY 11797.

Circle 124 on reader service card



PRIMARE SYSTEMS

The Series 928 from Denmark's Primare Systems consists of a preamplifier and a matching pair of mono power amplifiers. The preamp has inputs for a tuner, CD player, tape deck, MM or MC phono cartridge, and an auxiliary source. Input sensitivity and channel balance are adjustable for both types of cartridge; impedance is also adjustable for MC cartridges. Controls include a phase-inversion switch, a low-cut (infrasonic) filter, and an audio mute, which switches the signal to the headphone output; previous settings are recalled when the preamplifier is acti-

vated from standby. A remote control (not shown) is included.

The mono-block power amplifiers are rated for 100 watts each into 8 ohms, 200 watts into 4 ohms, and 300 watts into 2 ohms, all with no more than 0.001 percent total harmonic distortion. The three units all measure 7⅞ square in front and 12⅝ inches deep. The preamplifier weighs almost 20 pounds, the amplifiers 37½ pounds each. Price for the complete system: \$11,000. Distributed in the U.S. by Panther Enterprises, Dept. SR, 1431 Ocean Ave., #400, Santa Monica, CA 90401.

NOW HEAR THIS

The VA-1 PowerPak from Now Hear This is a 20-watt-per-channel outboard amplifier designed to power external speakers for a TV set. It can also be used for rear or side speakers in a surround-sound system or with small speakers and a portable CD or tape player in a "no frills" stereo system. The PowerPak can accept signals from a TV set's internal speaker terminals or headphone output as well as from standard audio line outputs without interfering with any of the set's controls, including a remote control. Measuring 3½ x 17 x 8¾ inches, the PowerPak has a high-gloss black finish. Price: \$129.95. Now Hear This, Dept. SR, 536 Stone Rd., Building H, Benicia, Ca 94510.

Circle 133 on reader service card





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RTA 11i

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"Polk's RTA Tower Loudspeakers Combine Legendary Polk Performance with Contemporary Style."

Big speaker performance with an efficient use of space.

RTA 11t

The RTA 11t is the finest conventional (non-SDA) speaker that Polk Audio manufactures. Its extremely high power handling (250 watts) and high efficiency (90dB) provide remarkable dynamic range from both large and small amplifiers. The RTA 11t utilizes the same technologically advanced fluid-coupled subwoofer design found in Polk's flagship model. Dual 8" sub-bass radiators are coupled to two 6½" mid/bass drivers, resulting in a fast, powerful, deep, and ultra-accurate bass response, without the boomy, undetailed sound of large woofer systems.

RTA 8t

In a slightly smaller package, the RTA 8t offers the same driver complement as the larger, more expensive RTA 11t, and thus shares its benefits of superior imaging, musicality, and detail.

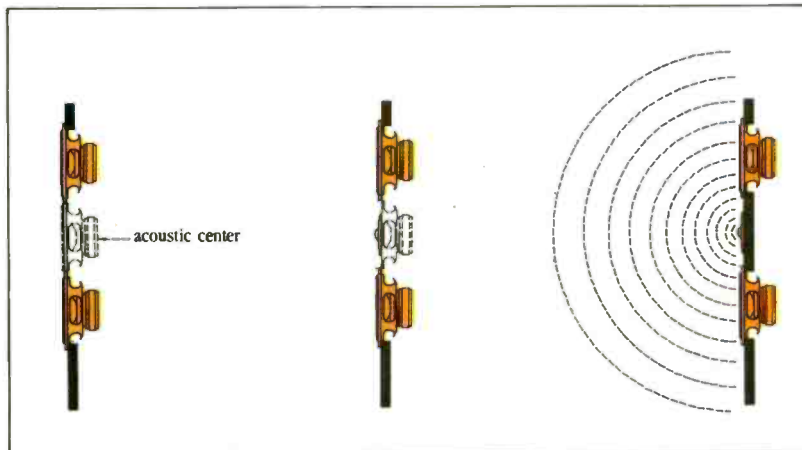
Both Polk RTA series loudspeakers achieve the extremely rare combination of good looks and state-of-the-art performance. The tall, elegantly slender, and deep "tower" design cabinets allow for substantial internal volume for high efficiency and powerful bass, while requiring less than one square foot of floor space. The small baffle surface area around each driver minimizes diffraction (sonic reflections), thereby insuring outstanding imaging and low coloration.

Positioning the 1" silver-coil dome tweeter between the two 6½" trilaminate polymer bass/midrange drivers achieves what is called "coincident radiation." This means that both the mid- and high-frequencies appear to radiate from the same place on the baffle resulting in perfect blending at the critical crossover point. (See illustration, below).

Polk RTA speakers have an uncanny ability to perfectly reproduce the human voice, pianos, guitars, and every other instrument whose faithful reproduction demands superlative midrange and high-frequency performance. Bass and percussion instruments are accurately reproduced with full visceral power and realism, without the heaviness, boominess, or lack of detail that plague lesser designs.

The discriminating listener who seeks state-of-the-art performance and design will find the quintessential combination of both in Polk's RTA series loudspeakers.

THE PRINCIPLES OF COINCIDENT RADIATION



The perceived source of sound of two identical drivers is centered in the area between them.

The benefit of coincident waveform propagation resulting in precise imaging, uniform vertical dispersion and startling midrange accuracy.

In the Polk RTA loudspeaker, the tweeter is positioned at the acoustic center of the drivers.



Polk Audio's RTA 8t and RTA 11t High Performance Tower Speakers

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Where to buy Polk Speakers? For your nearest dealer, see page 153.

—CIRCLE NO. 90 ON READER SERVICE CARD

NEW PRODUCTS

CALIBRO

Calibro's Lasso Lock is designed to prevent and deter car stereo theft. The locking device is said to fit quickly and safely into a head unit's cassette slot; a braided-steel cable is then looped through the steering wheel or around the steering column, thus preventing a thief from removing the stereo unit from the car. The locking device can only be removed by using the key or with special tools. If it is forcibly removed, the front face of the stereo head unit is destroyed. Price: \$39.95. Calibro Corp., Dept. SR, 511 E. 127th St., Lemont, IL 60439.

Circle 125 on reader service card



LINEAR POWER

Linear Power's Model 4302 car power amplifier is rated to deliver 30 watts each to four channels. It can power separate pairs of front and rear speakers or, with an outboard crossover, one pair of biamplified speakers. Each channel pair has adjustable input sensitivity, which allows the amplifier to be used with any input signal from 150 millivolts to 5

volts. There is a thermal-protection unit to prevent damage from excessive ambient temperature. Performance is guaranteed for one year—two years if the amplifier is installed by an authorized Linear Power dealer. Price: \$425. Linear Power, Dept. SR, 11545 D Ave., Auburn, CA 95603.

Circle 126 on reader service card

TERA

Tera Electronics' 31-inch stereo monitor/receiver includes a built-in four-channel amplifier and AM/FM stereo tuner with six AM and eighteen FM presets, two 4-inch full-range speakers, and wireless headphones that plug into the remote control. Matching options include (as shown) two-way speakers that can clip onto the TV cabinet, separate 10-inch subwoofers, and a cabinet to hold additional amplifiers and cross-

overs. The monitor/receiver uses Tera's double-differential correction circuit to improve horizontal resolution, which is rated as 560 lines. There is an S-video input with auto-sensing for use with Super VHS and ED Beta VCR's. Price: \$2,750; \$3,750 with options shown. Tera Electronics, Inc., Dept. SR, 89 Doug Brown Way, Holliston, MA 01746.

Circle 127 on reader service card



SPORT ELECTRONICS

Designed as an alternative to portable stereo players using headphones, the Safe & Sound Stereo Jacket from Sport Electronics has speakers in the collar, which the company says creates a "natural crossover" and delay characteristics similar to those designed for loudspeakers. The jacket has a pocket with an optional Velcro fastening system that can be used to hold a portable radio or cassette player. The speaker collar can be removed so that the jacket can be washed. Prices for the unisex-styled jackets range from \$60 to \$70. Sport Electronics, Dept. SR, 3707 Russett Lane, Northbrook, IL 60062.

Circle 128 on reader service card



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At Altec Lansing, we think it's time you had a hand in what you hear. That's the idea behind the new Altec 511 Tower, the first loudspeaker that gives you total control of amplification, tonal balance and imaging for each midrange, tweeter, upper bass and woofer. The result is a sound system that lets you mold the music precisely to your taste, so everything from Mozart to Motown will sound exactly the way you want it.

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CIRCLE NO. 80 ON READER SERVICE CARD



NEW PRODUCTS

BRETFORD

Bretford's Model 5575 ready-to-assemble TV/VCR cabinet is made of solid oak and oak-veneered components that use a hidden metal-to-metal fastening system. The inside compartment, behind wood-trimmed glass doors, is claimed to hold any size of VCR on a rollout shelf. Accessories and tapes can be stored under the shelf. It is available in dark, medium, and black lacquer finishes and measures 29¼ x 23½ x 16¾ inches. Price: \$209. Bretford Manufacturing, Inc., Dept. SR, 9715 Soreng Ave., Schiller Park, IL 60176.

Circle 129 on reader service card



OHM ACOUSTICS

Ohm Acoustics has added the Sub Bass Activator (SBA) technology used in its more expensive speakers to the Model 32 Coherent Audio Monitor (CAM). The SBA is said to eliminate infrasonics from the signal delivered to the 6½-inch woofer of the CAM 32 and to tailor its overall bass response to the acoustic characteristics of the woofer, the 10-inch passive radiator, and the bass enclosure. The egg-shaped tweeter enclosure on top of the speaker can be rotated to help create a three-dimensional stereo image in almost any listening position. Frequency response is rated as 37 to 20,000 Hz \pm 4 dB and sensitivity as 90 dB. The CAM 32 measures 22¼ x 12¾ x 11 inches. Price: \$450 a pair. Ohm Acoustics, Dept. SR, 241 Taaffe Pl., Brooklyn, NY 11205.

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CERCA

The Cerca Classic 120 loudspeaker, made by Pearl and Oakley Acoustics of Wales, is housed in a ceramic enclosure that's available in a black, gray, or white lead-free glaze or in a custom finish. The infinite-baffle, omnidirectional three-way system has a 1-inch metal-dome tweeter, a 5-inch polypropylene midrange, and a 6½-inch cobex woofer. The rated frequency response is 42 to 20,000 Hz \pm 3 dB, and sensitivity is rated as 86 dB sound-pressure level at 1 meter with a 1-watt input. The 28-pound speaker stands about 34½ inches high on its wood support, and the enclosure measures 13½ inches in diameter. Price: \$1,495 a pair. Distributed by An-teka, Dept. SR, 5830 S. Triangle Dr., Commerce, CA 90040.

Circle 132 on reader service card



All product information is provided by the manufacturers and does not represent the results of tests or evaluations by STEREO REVIEW. Suggested retail prices were current as of press time but are subject to change without notice.

MARTIN-LOGAN

The CLS II from Martin-Logan is the successor to the company's original Curvilinear Line Source electrostatic speaker. Claimed to be a "full-range" system, the CLS II has a rated frequency response of 33 to 22,000 Hz \pm 3 dB. It uses dual custom-wound audio transformers and all-polypropylene capacitors, with no inductors in the audio signal path. Sensitivity is rated as 86 dB, power handling as 200 watts per channel, and impedance as 4 ohms nominal, 1 ohm minimum (at 20,000 Hz). The large, curved diaphragm is optically transparent to reduce the visual impact of the 57½-inch-high speakers. Width is 14½ inches, and weight is 67 pounds. Price: \$3,500 a pair. Martin-Logan, Dept. SR, P.O. Box 741, 2001 Delaware, Lawrence, KS 66044.

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THE METAL AGE IS HERE

Serious recording enthusiasts know that in today's world of digital audio, conventional cassettes just won't do. Their formulations don't meet higher recording requirements.

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Sony also introduces Metal-SR. The first affordably priced pure metal cassette that offers greater dynamic range performance. Because, like every Sony Metal cassette, the Metal-SR has three times the magnetic energy of any Type II cassette. And it's available in both 90 and 100 minute lengths.

Each Sony Metal cassette is the ultimate in analog recording technology. So look for Sony Metal because recording will never be the same.

For more information write: Sony Metal, Sony Magnetic Products Company, Sony Drive, Park Ridge, NJ 07656.

SONY

THE SPEAKER GAP

by Ken C. Pohlmann

NO doubt about it—digital audio is the best thing for high fidelity since the microgroove LP record. Rarely does audio, or any other technology, take such a big stride forward in its evolutionary path. Consider: The recording engineer in a studio can mix to a digital medium, the data can be sent to a CD pressing plant, CD's can be replicated with the same data, and you can recover that data at home when you play the CD. It's an amazing chain—consumers have access to exactly the same signal that was originally recorded in the studio.

There's a problem involved here, however, and that is the loudspeakers used to monitor the signal. They throw a wrench in the works that can negate the advantages of the digital audio chain. No, it's not a limitation of loudspeaker technology itself; the problem is the disparity in the loudspeakers used by recording engineers and by the people who buy the recordings. In many cases, the type of speakers used by professionals sounds very different from the type used by consumers. As a result, you may hear at home a very different version of a recording from the one intended by the recording engineer and producer.

On one hand, a solution to the problem is easy. In the case of classical music, the studio monitors used are often similar to high-end consumer loudspeakers. Simply buy the kind of loudspeakers the recording engineer used, and you'll probably hear what the engineer heard (except for the effects of room acoustics). If you are lucky, the album notes may even say what kind of monitor was used during the recording session.

But even if you could afford separate speakers for each recording, in the case of rock-and-roll the problem tends to be much greater and tougher to solve. In general, rock studios use horn-loaded speaker systems, but most home loudspeakers use direct radiators. As a result, rock studio monitors usually sound

remarkably different from consumer loudspeakers. Even the additional small, direct-radiating speakers that are used to check the mix sound quite different from home speakers. How different? Well, kind of like night and day. Therein lies the problem.

Everything about the sound of a pop recording is created and shaped in the control room. And every decision made by the producer and the engineer is a result of what they hear from their monitors. Although

You may hear at home a very different version of a recording from the one intended by the producer.

you may have access to the same digital audio data, you probably won't hear the music the same way they did. That means that the playback, even from the most carefully recorded CD, is not as faithful as it should be. And don't believe the argument that fidelity to the original doesn't make any difference in popular music—that's just a blatant example of music chauvinism.

As with classical music, one solution is to buy the same kind of loudspeaker that was used in the recording studio. Ironically, however, that could necessitate a tremendous compromise. Many professional monitors, to put it mildly, sound lousy. Surprised? Well, it's true. When it comes to selecting loudspeakers, a recording studio has a different set of priorities from yours and mine. Above all, a professional rock monitor must provide very high sound-pressure levels, day in and day out, without blowing up. That necessitates an industrial-strength design. A home loudspeaker doesn't need that kind of muscle. Thus, manufacturers of consumer loudspeakers can use drivers that are better suited to high-fidelity reproduction. The result is a gap between professional and consumer loudspeakers.

Many studios *do* use consumer loudspeakers as alternative monitors, but most of the work is still done with professional monitors. Most engineers make tapes of inter-

im mixes specifically to audition over home systems, but that is only for relative evaluation, so they can mentally compensate. Some, concerned about the disparity, have used audiophile loudspeakers in the studio, but this approach simply hasn't caught on, especially with pop recording.

Fortunately, now that digital audio has smoothed out the kinks in the chain, more attention is being paid to monitoring. For example, Altec Lansing, well known in both professional and consumer circles, has addressed the problem. Tommy Freadman, Altec's chief design engineer, holds patents in loudspeaker technology and has produced forty Gold and Platinum albums. He felt it was time for a loudspeaker manufacturer to work directly with recording professionals to bridge the speaker gap.

The making of Spyro Gyra's new MCA album, "Point of View," provided the opportunity. Freadman demonstrated Altec Lansing's Bias 550's for the jazz group's leader, Jay Beckenstein, who installed a pair in the studio. The group used them as reference loudspeakers throughout the recording, relying on them more and more as the sessions progressed. The payoff came when it was time to master the completed album for CD; instead of the considerable tweaking that often takes place, alterations were limited to 1- to 2-dB level changes.

The finished CD should thus suit consumer sound systems better than most pop recordings. Ideally, you'd need your own pair of Bias 550's, but the simple fact that a consumer loudspeaker was used as the reference monitor for the recording moves the mixing philosophy light years closer to domestic reality and should result in better sound over *any* home loudspeaker.

I hope this experiment will stimulate interest in developing more suitable studio monitors. While some recording engineers (such as John Eargle and Tom Jung) have recognized the problem, others have not. We need more professionals willing to listen the way consumers do. I'll bet they'd make both musicians and listeners a lot happier by closing the loudspeaker gap. □

READ WHAT THE EXPERTS
HAVE WRITTEN . . .
THEN YOU DECIDE.



"Superb sound and virtual invisibility."
". . . side by side with speakers costing three to five
times as much, the AM-5 consistently produced
the more exciting and listenable sound . . ."

—Stereo Review,
Julian Hirsch



"Bose continues
turning the
speaker world
upside down. It
qualifies as one
of the handful of
companies
researching the
frontiers of
acoustics and
speaker design."

—Chicago Tribune,
Fick Warren

"... a sonic
standout."

—The New York Times,
Felix Fanzel

TAKING A "BUILDING
BLOCK" APPROACH TO A
HOME ENTERTAINMENT
SYSTEM LETS YOU BUILD
YOUR SYSTEM GRADUALLY
OR ALL AT ONCE, AND
ENJOY IT AT EVERY
STAGE!

THE MOST EXCITING PART OF YOUR VIDEO COULD BE THE AUDIO!

by Tim Holl

The videotape movie you rent this weekend may offer more entertainment than you thought possible. If it is recent, it probably has a hi-fi soundtrack rivaling the sound of compact discs. From the thundering bass of jet aircraft in *Top Gun* to the emotional impact of *Amadeus*, home video soundtracks have come a long way. Watching them on a normal television with its built-in sound system is rather like listening to modern albums on a wind-up phonograph.

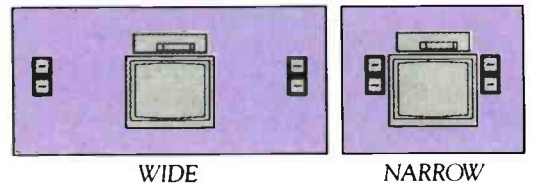
Enjoying this new dimension of sound and motion can be accomplished in different ways and at different levels. By just combining your current audio system with your television you can begin to unleash the excitement built into today's videos and broadcasts. And don't forget that many video soundtracks are also "surround" encoded. By making a modest upgrade to your current system, you can be on a path toward a full surround sound system with as many as six speakers that will rival the sound heard in some of the best cinemas, and exceed that heard in most others. But if you find the thought of six speakers in a room daunting, forget the bulky multi-channel systems of the past—today such a system can be *virtually invisible*. The path you take to achieve the full performance locked in today's software and off-air program material is up to you. Regardless of approach, the key to really recreating the cinema experience in your home and building a true *home entertainment system* is understanding the performance requirements and potential pitfalls of such a system, and knowing what's available to build it.

Does "audio for video" impose additional requirements?

High-quality audio soundtracks on laser disc and videotape are a relative newcomer in the field of high

fidelity. I remember the excitement I felt several years ago when I took home an early model laser disc player, hooked it up to my sound system, placed my television midway between the speakers and settled back to watch "Raiders of the Lost Ark." That excitement was fully justified, and I soon became totally absorbed in the entertainment . . . until I was jarred out of the world of Indiana Jones by the sound of his voice somewhere off-screen, even though I saw him obviously speaking on-screen. Audio for video was apparently not as simple as the "audio only" material to which I had been accustomed. In the world of audio for video, spatial cues our eyes receive must match the associated audio cues our ears receive, and that was the missing element.

The area of high fidelity audio for home video is so new that misconceptions about what is appropriate abound. While much work has been done over the years on high quality audio associated with video, this work has almost exclusively been in the realm of cinema sound—a situation that is very different from your home. In the cinema, the listening space is



(Wide) Speakers too far to either side of the TV screen may produce an unnatural sounding phantom center image. Speech will not be localized on-screen as the eye and ear expect to hear.

(Narrow) By moving the speakers closer to the TV screen, a more pleasant and natural on-screen speech effect is created. Be sure the speakers you use are magnetically shielded to prevent picture interference.



The cinema sound stage is much larger and wider than even the largest home TV screen, with loudspeakers behind the full width of the screen, exactly matching the size of the sound stage. By building toward the ultimate home sound system, you get closer to a cinema experience with each "building block" step taken.

obviously much larger than that in the home. But more importantly, the screen is also much larger and matches exactly the size of the sound stage (the loudspeakers are behind the screen). In the home, even large rear-projection televisions provide small-screen viewing by comparison. The TV screen is much smaller than the size of the audio image delivered by a normal stereo system with 6 to 8 feet of separation between the loudspeakers.

Taking all this into account, let's take a "building block" approach to a home entertainment system. Starting from the simplest utilization of a current stereo system, to a full multi-channel system, let's examine the benefits and drawbacks of each approach.

A first step.

The first step is to connect your video sound to your stereo system and place your TV screen midway between the speakers. Make sure to use the stereo audio outputs of your VCR or laser disc player. (The most common mistake is connecting the signal from the RF output [Antenna Out] of a hi-fi VCR or laser disc player to the TV, then connecting the audio outputs from the TV to the hi-fi system. This kind of RF output connection does not transmit stereo sound to the television, and you will end up with monophonic playback of stereo sources!)

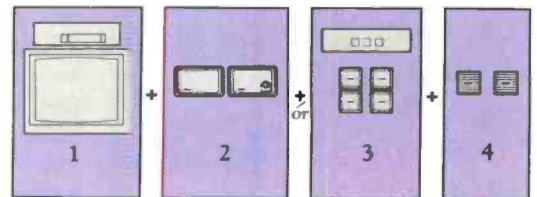
Properly connected, this setup will provide an immediate improvement in the tonal balance compared with just about any television's built-in speaker. In addition, the audio image will be wide, extending to at least the width of the space between the speakers. (Vocal localization will not be as strongly on screen as you are used to with your television, but this compromise may be acceptable to you—if not, I will show you how to improve matters later.) The improvement will definitely be considered worthwhile, particularly on video material with a musical

soundtrack. In addition, if the speakers can produce deep bass, you will hear another benefit. In movies, deep bass is often used to provide essential clues to the overall atmosphere of a scene. A deep, continuous bass note is often used to impart unease or danger, such as when "enemy" space ships come into view. A loudspeaker without good bass performance will literally not produce such notes, and the effect will be totally lost. If your speakers lack adequate bass response, you may wish to consider upgrading them. Here, knowing what's new can help a great deal. If

space is at a premium, or if you simply object to the negative cosmetic impact larger speakers might impose on your decor, Bose® Acoustimass® speaker systems could provide an excellent solution. In these systems, the stereo image is provided by enclosures that are so small, they virtually disappear into the room. A patented Bose design allows you to conceal a third piece, the Acoustimass bass module, anywhere in the room, where it produces full, deep bass without giving any audible hint as to its location.

All hooked up, where else to go?

With your current stereo system properly connected, the benefits are better sound, wider image and deep bass. However, there is also a localization problem to overcome. Unlike typical audio software, much of the sound on a television is speech, most of it coupled to an image on the screen of the person talking. We expect that speech to be strongly localized on the TV screen. However, the phantom center image produced by the pair of wide-spaced speakers just does not provide enough on-screen localization. Thus, if such a system is used, a sense of dissatisfaction



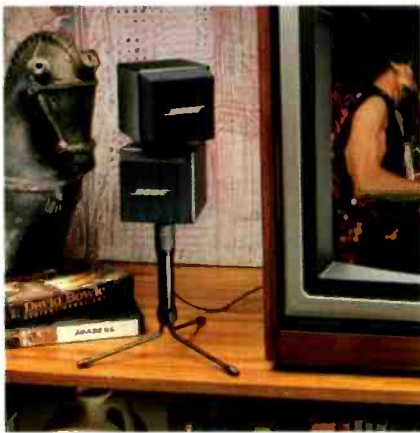
The "Building Block" Approach

Start with your TV and hi-fi VCR (block 1). Add powered speakers or a Pro-Logic® receiver and a pair of hi-fi speakers (blocks 2&3). Put blocks 2 and 3 together and add rear speakers (block 4) and you've built the "ultimate" surround system while enjoying it one piece at a time.

with the result frequently appears with time, even if the viewer cannot quite put his finger on what actually is wrong. A degree of on-screen localization can frequently be retrieved by slightly turning up the volume on the television speaker, but a better answer is to move the speakers adjacent to either side of the screen. This will give a narrower sound stage, but will retain all the higher quality sound with excellent on-screen localization. To do this requires that the speakers be magnetically shielded so that the television picture is not adversely affected. (Once again, the Bose® Acoustimass® speaker systems are ideal for discreet placement adjacent to the TV. They are exceptionally small, and are magnetically shielded.)

Moving onward toward the home cinema.

Looking at slightly more complex audio-video systems, it becomes possible to enjoy on-screen vocal localization with a wide stereo image. To do this, a steering logic surround decoder is included in the system. However, the important part of what this decoder does is in the *front* of the room, not in the rear as might be expected. It assures that speech is directed to a speaker close to



Adding a pair of quality high fidelity loudspeakers adds to the excitement and enjoyment of watching television and videotape movies.

the screen. In most video material, speech is recorded monophonically to assure that good on-screen localization can be obtained. A steering logic surround decoder has right, left and center outputs for the front of the room. Its logic will direct the monophonic content of the program, including speech, to the center channel only, and not to the right or left channels. (Simpler surround decoders without steering logic will not provide the same benefit, even if they have a center channel, since monophonic signals will be fed equally to

the right and left channels in such decoders.) It should be noted that the front channel "steering" to give the on-screen vocal localization will be effective on most material, even if non-surround encoded material.

With full bandwidth stereo speakers widely spaced to either side of the television screen for a normal wide stereo image, the center channel speaker(s) should be placed on top of or adjacent to the television. You now, of course, need those center channel loudspeakers, but they do not have to produce deep bass, as their real purpose is to localize speech. Once again, they must be magnetically shielded since they are close to the TV screen, and amplification must be provided for them. Steering logic decoders can be purchased as separate pieces of equipment or as features incorporated into a receiver. Such equipment may well provide power amplification for any rear surround channel speakers, but can fail to provide amplification for the center channel. This requires a separate amplifier or, more conveniently, the use of magnetically shielded self-powered speakers such as the Bose Video RoomMate® speaker system.

Rear channel . . . the final frontier.

So far, I have only covered what the surround system can achieve in the *front* of the room. Indeed, this is probably the most important function of it. However, a complete audio-video system should also include rear channel speakers as well.

It is normally desirable to select inconspicuous speakers, since there now will be many of them in the room. It is also desirable to place them such that furniture is not positioned directly between them and the viewer (such as the back of the favorite armchair being used). Such placement is most easily achieved if they are positioned relatively high on the rear wall. If deep bass were not needed, this would allow the use of any number of models of small speakers. However, investigation has shown that in about 50% of surround encoded movies, bass is deliberately included in the surround channel. To get the full impact of such movies, it is desirable to reproduce that bass. Once again, Bose Acoustimass systems are an excellent solution, providing deep bass, and very small stereo speakers that can be easily wall-mounted.

If a full surround system is used as described, the desired effects in the rear will only be heard on surround encoded material (which includes almost all modern movies). However, the left-right-center steering produced by the decoder will, as stated earlier, be effective on most material, surround encoded or not. It is therefore a good idea, if possible, to only switch the rear speakers on or off for encoded or non-encoded material respectively, leaving the decoder itself active at all times.

Now playing . . . The total cinema experience.

The ultimate system described is an audio system that can be used as a "home theater" and will rival sound heard in some of the best cinemas. However, it is not necessary to take an "all or nothing" approach. Remember that I built up to this system, showing just what each addition added. In just the same way, you can build a system all at once, or one step at a time. The addition of just a pair of quality speakers and suitable amplification can be a tremendous improvement, and the start of your dream audio-video system. Addition of a steering logic surround decoder for a full-width sound image together with on-screen vocals brings you closer to a true cinema experience. Finally, if you add rear channel speakers to the system, surround encoded material fills your room with sound. There is no question that at each stage the improvement is very noticeable, but the *most* noticeable improvement will be when you take that first step. You may wonder how you ever put up with ordinary TV sound, and find yourself renting those old favorites again to hear what you missed the first time. To find out where to audition a system like the one described in the article, call 1-800-444-BOSE.

About the author:

Tim Holl has spent 24 years in the audio business as a Senior Engineer and VP/Technical Director. Tim is currently Manager of Research in Acoustics at Bose Corporation, USA.

A MORE LIFELIKE
EXPERIENCE IS JUST
WAITING TO BE
UNLEASHED, BUT ONLY
IF YOU KNOW HOW, AND
ONLY IF YOU PLAN TODAY
FOR YOUR
NEEDS TOMORROW.

CHOOSING THE RIGHT COMPONENTS.

If you haven't yet read the article on the last three pages you could be cheating yourself, because the information it contains could literally change the way you enjoy your music system *forever*. Some new-found excitement may be available in your home today, hidden in the hi-fi tracks of your video software, or in the television airways. A more lifelike home entertainment experience is just waiting to be unleashed, but only if you know how, and plan today for your needs tomorrow. With the information contained in this article you can greatly enhance the investment you have already made or are about to make. Planning your audio system should not be limited to just music, rather you should view your

components in terms of total *Home Entertainment*. Even if your current video activities are simply watching sporting events or standard network broadcasts on your TV, you will be amazed at how much more lifelike the experience of your entertainment selection will be when delivered in real high fidelity sound. With the purchase of the right components, particularly speakers, you can enhance your enjoyment *today* and protect your investment from becoming obsolete. In the following pages we will introduce you to Bose® speaker systems that use unique patented technologies to achieve a standard of design and performance that until recently was not possible.

Just starting your entertainment adventure?

If you have nothing more than a television set the best way to begin the development of your home entertainment system is with the Bose Video RoomMate® speaker system. The Video RoomMate system will provide full-range, high fidelity sound with crisp, clear stereo separation that will enhance your viewing and listening enjoyment.

The Bose Video RoomMate system is a *fully-integrated* system. This eliminates the need to purchase or connect separate amplifiers or electronics. In addition to high performance stereo amplification, the system incorporates magnetically shielded patented Helical Voice Coil drivers which increase the performance, efficiency and durability of the system, while protecting against video interference. The Video RoomMate system also includes active equalization circuitry which balances the tone automatically and is optimized for video broadcasts. Additional limiting circuitry virtually eliminates distortion even when played at maximum volume. As your system grows, the Video RoomMate system can be utilized as an ideal center channel speaker in a multi-channel system, allowing you to add the Video RoomMate system now with confidence that it will not become obsolete as you continue to build your home entertainment system.



The Bose Video RoomMate speaker system's integrated design includes shielded stereo speakers, stereo amplifier, limiting circuits and active equalizer, all in one package.

“SUPERB SOUND AND VIRTUAL INVISIBILITY.”
 “... SIDE BY SIDE WITH SPEAKERS COSTING THREE TO FIVE TIMES AS MUCH, THE AM-5 CONSISTENTLY PRODUCED THE MORE EXCITING AND LISTENABLE SOUND...”

—STEREO REVIEW
 Julian Hirsch

INTRODUCING BOSE® “VIRTUALLY INVISIBLE” SPEAKER SYSTEMS.

Bose® Acoustimass®-5 Direct/Reflecting® speaker system

The magnetically shielded Acoustimass-5 speaker system is the result of years of research dedicated to providing room-filling, high-quality sound reproduction. A pair of tiny stereo imaging cube speaker arrays and single compact Acoustimass bass module are “virtually invisible” in a room, yet capable

of powerful bass and exceptional spatial qualities. The performance of the Acoustimass-5 surpasses even that of much larger, more expensive speakers. This level of performance is the result of patented Bose Acoustimass technology. Unlike conventional speakers, Acoustimass speakers launch sound into the room by two masses of air, rather than by a vibrating surface. This results in purer bass response with virtually

no distortion. Its small size and distortion-free performance allow the module to be hidden anywhere in a room without any audible hint of

its location. The Acoustimass module is complemented by a pair of stereo imaging cube speaker arrays—each measuring only slightly over 7 in./17 cm high. A product of the Bose heritage of Direct/Reflecting® speaker technology, their design is based on over 20 years of research dedicated to recreating sound that approaches the experience of a live performance.

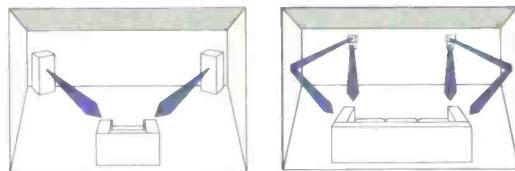
Additionally this unique Bose design also delivers the benefit of Stereo Everywhere® sound regardless of where you sit in the listening room (see diagram).

Each cube array can be conveniently mounted on a wall, ceiling, or shelf with available Bose mounting accessories, which can provide for a “virtually invisible” installation in your room.



One of two stereo speaker arrays included in Acoustimass-SE5 styling alternative.

One of two stereo imaging cube speaker arrays included in Acoustimass-5 system.



Conventional speakers (left) reproduce mainly direct sound. They miss much of music's realism and impact—and let you hear full stereo only in a narrow spot. Bose Direct/Reflecting® speakers (right) accurately reproduce the balance of direct and reflected sound, providing greater realism in full stereo throughout the listening room, wherever you sit.

WHATEVER YOUR
BUDGET, DECOR OR
LISTENING REQUIREMENTS
BOSE SPEAKER SYSTEMS
COMBINE SURPRISINGLY
SMALL SIZE WITH
HIGH PERFORMANCE.

PURER SOUND AND
"VIRTUAL INVISIBILITY"
FROM BOSE®
TECHNOLOGY.

Bose Acoustimass®-3
Direct/Reflecting® speaker system

Offering much of the performance of the Acoustimass®-5 speaker system but at lower cost, is the new Acoustimass-3 speaker system, the world's smallest speaker system offering purer sound and virtual invisibility.

Unique wedge-shaped, magnetically shielded cubes, each about the size of a softball, are coupled with a patented Acoustimass bass module only slightly larger than a shoe box. As with all Bose Acoustimass systems, the bass module can be hidden anywhere in your room yet all the bass still *seems* to come from the imaging cubes.

The system produces life-like stereo sound with all the bass, power handling and dynamic range you would expect only from a much larger and more expensive system.

The extremely small size of the Acoustimass-3 system allows placement anywhere in your room . . . next to a TV, or any out-of-the-way location. Available mounting accessories allow additional flexibility of installation.

Compare Acoustimass-3 speakers to larger and more expensive systems. We submit no system in its price class will offer the same level of performance and flexibility.

One of two stereo imaging cubes included in Acoustimass-3 system.



Bose® Freestyle™ speaker system

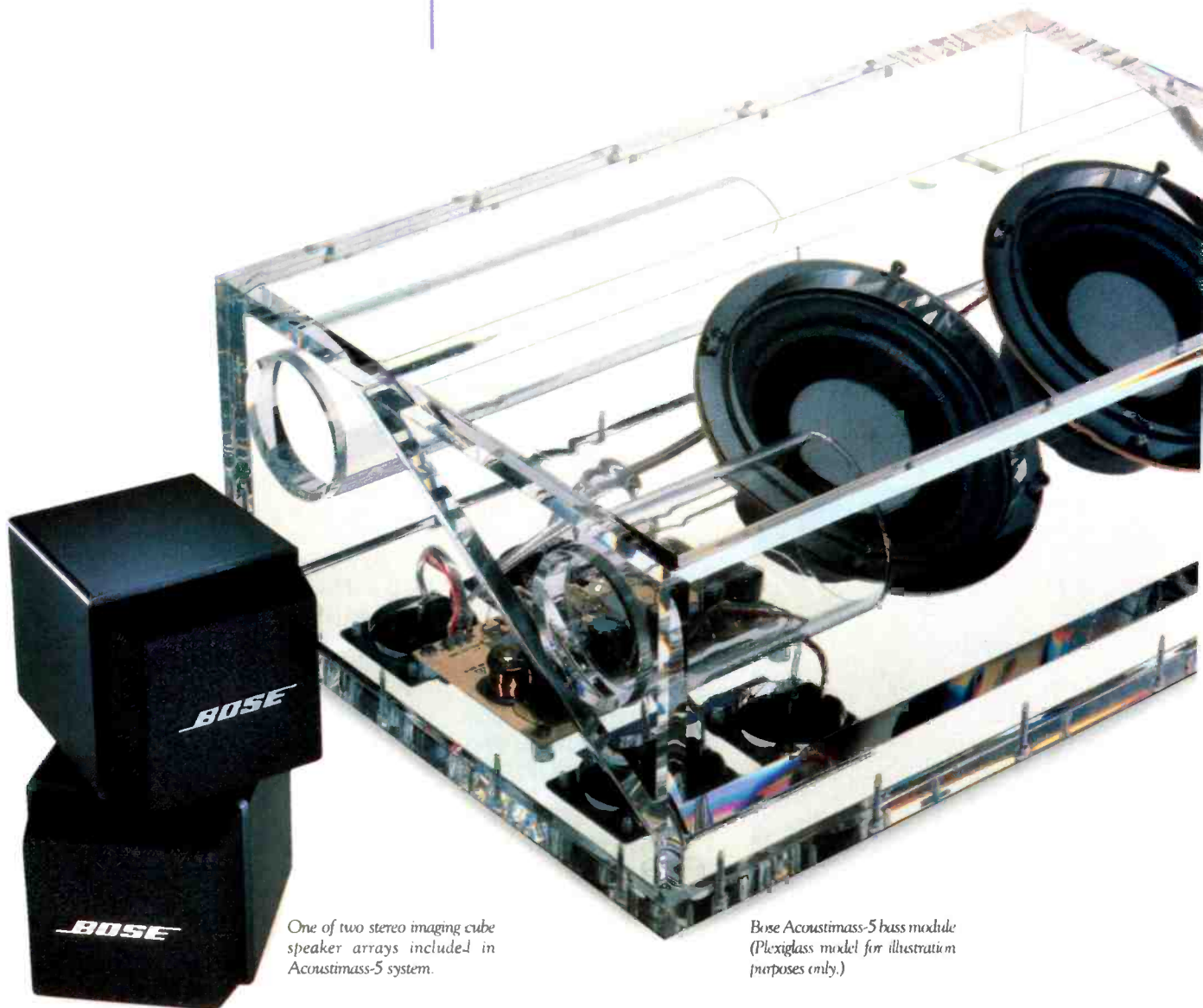
Although not an Acoustimass system, patented Bose technology in the Freestyle system provides maximum performance in a small, inexpensive bookshelf speaker. Surprisingly small size combined with high performance qualify the Freestyle system as a Bose "virtually invisible" speaker system.

At the heart of the Freestyle speaker system is the Bose Helical Voice Coil driver. After 11 years of continued Bose research in the performance areas of accuracy, power output, efficiency and reliability, we believe this driver is the most highly developed in the world. Used for the first time in the Bose Freestyle, this is the latest and most enhanced Bose HVC driver to date. It provides exceptional power handling, and extended high frequency performance. A patented curved and flared porting system, optimized just for this new driver, allows the Freestyle speaker to produce low frequencies previously only thought possible from a much larger enclosure.

The Freestyle offers performance that will impress the most discriminating listener, particularly for its size. As with the other "virtually invisible" Bose speaker systems, mounting accessories provide placement flexibility for the Freestyle.

WHAT MAKES AN
ACOUSTIMASS SPEAKER
DIFFERENT FROM
ANY OTHER?
AN ACOUSTIMASS
SPEAKER LAUNCHES
SOUND INTO THE ROOM
BY TWO AIR MASSES,
RATHER THAN BY
A VIBRATING SURFACE.

ACOUSTIMASS[®]
TECHNOLOGY.
A BENEFIT
YOU CAN HEAR
BUT NOT SEE.



One of two stereo imaging cube speaker arrays included in Acoustimass-5 system.

Bose Acoustimass-5 bass module (Plexiglass model for illustration purposes only.)

(Top left) Bose Acoustimass-SE5 speaker system.

(Top right) Bose Acoustimass-5 white wall-ceiling mount accessory (WC-6) in typical "surround sound" rear channel application allows "virtually invisible" installation.

(Bottom left) The Bose Video Roommate® speaker system can be used to add high fidelity to simple TV viewing.

(Bottom right) Acoustimass bass modules conceal easily virtually anywhere.



If imitation is the sincerest form of flattery, then Bose® Acoustimass® speaker systems have received their due serving of praise. While many manufacturers have introduced three-piece speaker systems that look much like Bose Acoustimass speaker systems, none can duplicate the operation or performance of patented Bose Acoustimass speaker technology.

Like many, you may have marveled at the extremely small size of the Bose Acoustimass speakers, which can *literally fit in the palm of your hand*. But the real secret is hidden from view, in the Acoustimass module which allows the imaging speakers to be so small. Only Acoustimass speaker technology can allow such speakers to be so small. Only Bose patented Acoustimass systems achieve it all. Purer sound, virtual invisibility, high power handling, improved efficiency and wider dynamic range.



Bose Acoustimass-3 bass module and one of two stereo imaging cubes included with Acoustimass-3 system. (Plexiglass model shown for illustration purposes only.)

The Important Benefits Of Bose Acoustimass Speaker Systems.

• Purer sound

Sound is launched into the room by two air masses, rather than from a vibrating surface. Acoustic filtering of distortion within the Acoustimass module means that the air masses are purer sound generators than mechanically vibrating cone surfaces.

• Virtual invisibility

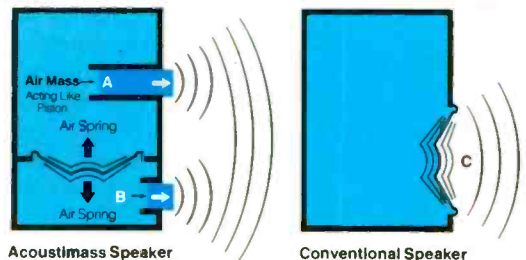
The acoustic filtering of distortion means that the compact Acoustimass module can reproduce the lower musical spectrum, yet without the audible localization of the source of the sound. The remaining upper octaves of music are reproduced by extremely small and unobtrusive stereo imaging speakers.

• Wider dynamic range

The reduced distortion, high efficiency and power handling design of the Acoustimass system means that you can reliably take full advantage of the wide dynamic range of digital compact discs and hi-fi videocassettes.

How An Acoustimass Module Works:

Improving speaker performance means first reducing distortion. The design of an Acoustimass system produces no discernible distortion. (See diagrams.) This means a better sound. It is the distortion in the reproduction of bass frequencies which allows the listener to pinpoint the location of their source. This is why a conventional subwoofer must be placed close to its satellite speakers for optimum performance. Unlike conventional systems, however, the reduction in distortion from a patented Acoustimass speaker system also gives the listener an additional benefit—the ability to hear all the sound seemingly originate solely from the small imaging speakers. The result is a system with better performance which can be easily concealed anywhere in your listening room. The ultimate benefits of this patented Bose speaker technology? *Purer sound and virtual invisibility.*



Left: An Acoustimass speaker launches sound into the room using two masses of air working like pistons (A & B, darker blue), rather than by a surface vibrating directly into the room. The sound launched into the room by the Acoustimass speaker's air pistons is the purest sound that can be produced by present technology.

Right: A vibrating cone radiating directly into the room (C) produces more distorted sound.

AT BOSE THE PRIMARY
OBJECTIVE IS
TO PRODUCE AUDIO
PRODUCTS WITH
PERFORMANCE
ADVANTAGES WITH CLEAR
BENEFITS TO LISTENERS
EVERYWHERE.

BOSE® CORPORATION:



*Dr. Amar G. Bose, founder and
Chairman of Bose Corporation.*

The Bose story began in the research laboratories of MIT. Dr. Amar G. Bose, professor of electrical engineering at the Massachusetts Institute of Technology (MIT), began wondering in the 1950's why loudspeakers with impressive published technical specifications failed to reproduce the full, rich subtleties of a live musical performance.

For 12 years, Dr. Bose studied speaker design and psychoacoustics, the science of the human perception of sound. His findings resulted in design concepts for radically different kinds of speaker systems.

The company behind the products.

Bose is the world leader in acoustics and innovative audio products for home and industry.

Bose Corporation was formed in 1964. In 1968, together with a team of engineers including many of his former students, Dr. Bose entered the high fidelity music field by introducing the Bose 901® Direct/Reflecting® loudspeaker system. With the 901 system, Dr. Bose and his research team achieved international acclaim by setting a new standard in music reproduction.

Bose Corporation designs, manufactures and markets some of the finest audio products in the world. In fact, Bose has been chosen by many of the world's leading automobile, computer and television manufacturers to provide quality sound for their products. At Bose, the primary objective is to produce audio products with performance advantages that provide clear benefits to listeners everywhere.

Bose engineers have worked to assure that the product reaching the consumer is thoroughly tested for quality and durability, and will perform reliably for years. By creating and employing the Syncom® computer quality assurance program, Bose speaker components receive demanding and comprehensive

acoustical testing, which assures that they meet critical performance and reliability requirements.

In applications ranging from private home listening to automobiles, televisions, computers or large-scale concert hall reinforcement, Bose products deliver sound to some of the most demanding listeners in the world.

Performance, innovation and quality combine to make Bose products the choice of both professionals and consumers alike, which is why we believe: *"If music is important in your life, sooner or later you will own a Bose system."*

For a free Bose product brochure, or the name of the Bose dealer nearest you, call 1-800-444-BOSE.



We have produced some of our most popular models in black finish to complement today's high-technology audio/video equipment.

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The editors of this magazine do not throw the word "classic" around lightly or often, but here we are talking about such performances as Louis Armstrong's *Honeysuckle Rose*, Erroll Garner's *Where or When*, Bessie Smith's *Gimme a Pigfoot*, Buck Clayton's *Don't You Miss Your Baby* with Jimmy Rushing and Coleman Hawkins, Miles Davis's *Blue in Green* with Bill Evans and John Coltrane, and Stan Getz's *Misty* with Herbie Hancock.

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by Ian G. Masters



Matching Levels

Q I frequently make tapes of musical selections from LP's, using a pair of turntables and a mixer. Once a piece of music has started I don't like to vary its level, but I often have trouble matching a new selection to the previous one, and all recordings seem to be different. I have even tried measuring an upcoming track from the mixer's cue output, so that I can predict the correct setting for that selection, but levels still seem to be off. What else can I do?

JAMES C. THOMAS
Trenton, NJ

A Anyone who has ever tried to make a compilation tape has had this problem. One way around it is to preview every selection before you even start taping and note the setting for each one. This is time-consuming, of course, and far from foolproof because matching levels involves some quite complex psychoacoustic factors.

For one thing, whatever level a particular selection may show on a meter, its *apparent* loudness has a great deal to do with its musical content. A track with lots of high-frequency content will sound much louder than a bass-heavy selection, for instance, even though the level indicator says they are the same. Music with a large transient element will probably sound too quiet because of its high peak-to-average ratio; if you set your level so the kick-drum, say, is just hitting 0 dB, the *average* level—which determines our impression of

loudness—will be too low. By the same token, highly compressed music, in which the peak-to-average ratio is deliberately reduced, will sound too loud for a given level reading.

The meters themselves contribute to the difficulty. Peak-reading indicators will keep you safely out of the distortion zone, but they give little indication of other aspects of the signal, while average-reading VU meters may represent apparent loudness (with the reservations noted above) but leave you open to signal overload. In addition, recordings themselves have internal level variations, but for matching purposes you are really only concerned that the beginning of one selection be reasonably close to the end of the previous one; simply setting each track for its proper peak level does not take this into account.

The only solution is to take an educated guess for each selection and be prepared to alter the level appropriately within the first few moments. If you make such adjustments gradually and at musically appropriate points, they should be virtually inaudible. Generally, you should try to keep your peaks a little lower than you might otherwise do to give yourself a little headroom if a selection comes along with more oomph than you had anticipated.

Mixing Equalization

Q I recently bought speakers that require a dedicated equalizer connected in a tape-monitor loop or between the preamplifier and power amplifier. I want to connect my old speakers to my receiver's B outputs and place them in another room, but I have discovered that I can't use both pairs at the same time. If the main speakers are equalized properly, the remote ones sound terrible; if I switch off the EQ, the new speakers don't perform correctly. Therefore, I intend to buy a separate power amplifier for the remotes and feed it by Y-cords from my receiver's preamp output. Is there something I can do to control the signal level going to the new amplifier so the speakers will be reasonably matched?

JOHN WILCHER
Kaw City, OK

A There are several ways to approach this. If you simply want to reduce the volume of whichever speaker/amp combination is louder but still retain overall level control at your main amplifier, it would be a simple matter to insert an inexpensive stereo volume control (or potentiometer) in whichever cable requires it. The same thing could be accomplished by choosing as your second amplifier a model that has input-level controls.

If you wish to have totally independent level control of the two amplifiers, feed the second one from a pair of tape-out jacks (through Y-cords, if it would otherwise interfere with recording). This will give a flat feed to the second amplifier before the level and tone controls of your main unit, allowing complete independence in the second location through a simple volume control or by using the input controls of the second amplifier. If you're not up to inserting the level control yourself, you could use an inexpensive stereo mixer.

Tilting CD Players

Q Some of my compact discs make clicking sounds on certain bands or gradually begin to mistrack as they play. I have found that elevating the rear of the player will sometimes fix this, allowing a clean playing of the complete disc. Why does that help?

TOM OLIVER
Amarillo, TX

A For all its technical sophistication, a compact disc player relies on a fairly simple mechanism to move the laser across the surface of the CD in response to commands from electronic position-sensing circuits. Some misbehavior of this mechanical device can be masked by the error-correction system, but if the laser beam strays too far from where it should be the correction circuitry can't cope and the player mistracks. The audible effect of this can be the clicks you hear or, in extreme cases, skipping.

In your case, I suspect that the laser-carrying device is lagging somewhat, either through friction or misalignment, and that by lifting the rear of your player you are using gravity to offset whatever is holding the laser back. A trip to a service facility is probably advisable, or you could just keep on tilting the player since that seems to work.

Reducing Separation

Q I find that some recordings have exaggerated separation, as if one were sitting in the middle of an orchestra rather than in the audience. Years ago I had a preamplifier with a control that would reduce separation to compensate for such "ping-pong" stereo. Is there an add-on piece of equipment available now that will do the same thing?

VICTOR A. POLESHUCK
Rochester, NY

A Not that I know of, but it would be a simple matter to rig up such a circuit yourself. All you need is an inexpensive variable resistor (also called a

More For My Money

I'd always thought you needed big speakers to get good sound. So every couple of years, some department store would have a sale and I would buy the biggest speakers I could find for the money. Then I moved across the country to take a new job. I left my old speakers behind. I was sure they wouldn't fit in my new apartment and I was ready for new ones anyway.

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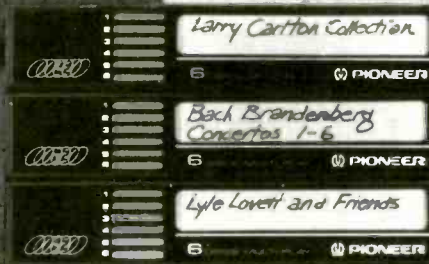
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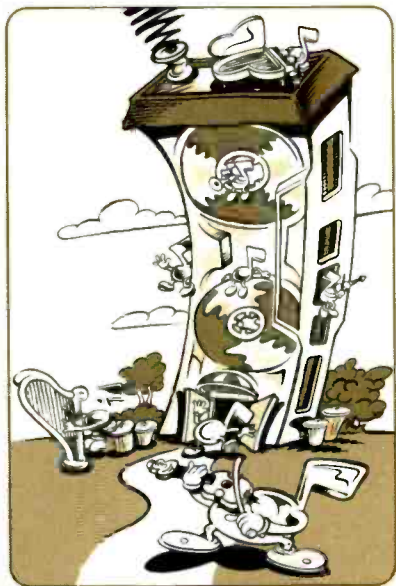
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And SA-X, which provides transparent reproduction of the most powerful digital sources, is available in convenient lengths of 46, 60 and 90 minutes.



volume control or potentiometer), a couple of fixed resistors, and something to house them in. All three resistors should have values of 50 kilohms. The pieces are readily available at Radio Shack or any electronics parts store.

Wire the fixed resistors in series with the left and right “hot” signal leads. These isolating resistors will prevent any potential damage that might be caused by connecting output circuits in parallel. Then, *after* these resistors, bridge the left and right channels through the variable resistor by connecting one of them to the center lug and the other to one of the outer terminals. This setup will allow you continuous control from full separation to mono (the direction you have to turn the control to reduce separation will depend on which of the outer terminals you use).

The easiest way to assemble this device is to insert it directly into a standard stereo cable that can be plugged into a tape-monitor loop or between the preamplifier and power amplifier. Alternatively, you could use a small box with RCA jacks for inputs and outputs, which would mean you wouldn’t have to cut a cable (but you would then need two cables in operation).

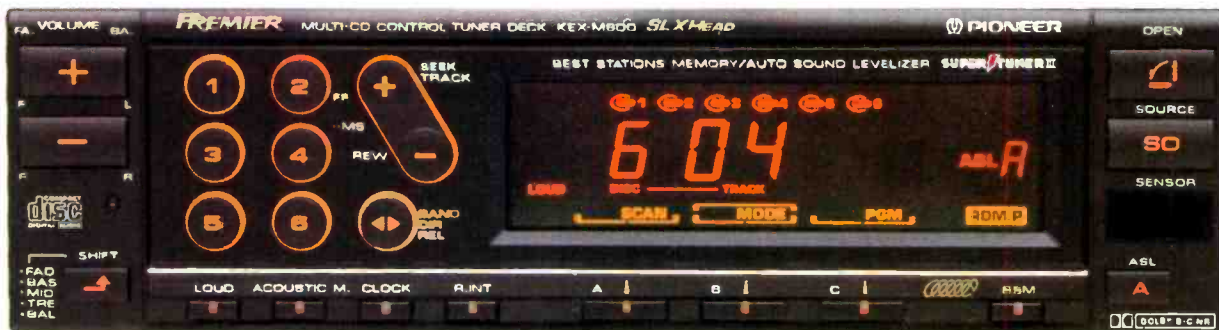
A word of warning: Because of the isolating resistors, the circuit I’ve described will cause some reduction of gain. In normal use, that wouldn’t matter, as you would only have to turn the overall level control up a bit to compensate. But if the circuit is connected to a tape loop, there is the risk that the monitor switch will be turned off inadvertently, immediately returning the signal to full level. Not only might this be annoying, but it could damage your speakers. If possible, therefore, the circuit should be placed between your preamplifier and power amplifier (or between the pre-out and main-in jacks of a receiver or integrated amplifier, if they’re provided) so that it can’t be switched out accidentally.

Power Consumption

Q *The specifications for my new receiver state that its power consumption is 550 watts. Am I drawing all this power all the time, or does loudness have anything to do with it?*

STEW COE
East Haven, CT

A Loudness has *everything* to do with it. Such specifications usually mean that the equipment draws the stated power at full rated output, a condition that occurs only on musical peaks, which are very brief. Most of the time, your receiver will be using only a tiny fraction of that power. □



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THE BASICS

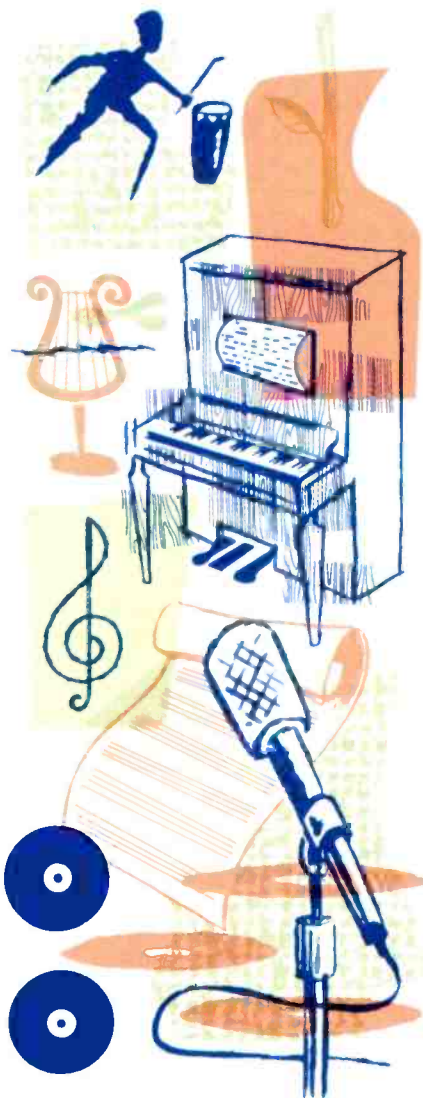
FROM CODING TO RECORDING

An overview of sound reproduction begins a series of articles on the basics of audio.

BY IAN G. MASTERS

MUSIC, like speech, has been an important element of human culture since men and women first began to organize themselves into communities. From the beginning, these forms of organized sound have been used by people to convey information and to stimulate emotions. Music and language played such a central role in society that the urge to preserve them sprang up early; each generation sought to pass along both its verbal wisdom and its ceremonial music to its successors.

The medium, to begin with, was memory. Parents taught their children the culture's lore, in words and in music, so they could recite or play it to their children in turn—the oral tradition. What was passed on by this method was the means to *re-create* the music or the words in



each succeeding age; the actual sounds were new each time and dissipated as soon as they were made. Each generation passed along instructions for performing specific, relatively unchanging sounds, but they had to be freshly created each time.

The process was made much more efficient by the introduction of writing, both of words and of music. Alphabets and musical notation are both types of codes that tell musicians and speakers specifically what sounds to make. Writing had the advantage of being permanent: A long-forgotten document could still be understood and acted on even though the chain of direct transmission had been broken. And writing was relatively insensitive to the condition of whatever it was written on; if a manuscript became soiled or damaged, a fresh copy could always be made, as long as the information on the original was legible. Nevertheless, the reader of such a document still had to use the codes it contained to create the words or music anew.

In the aftermath of the Industrial Revolution, a number of inventors sought to remove the human re-creator of sounds from the chain by developing such automatic devices as the music box, the hurdy gurdy, and the player piano. In these cases, the coded instructions told a *machine* what to play, rather than a musician, but it still had to create the sounds itself. And it was very

THE BASICS

limited as to what sorts of sounds it could make: A player piano could only sound like a piano, not a violin or a human voice. Although such gadgets were popular for a time, as there was no alternative short of live performance, what was needed was something that would capture and preserve sound itself, not a written interpretation of it.

The Nature of Sound

When an object vibrates, its motion alternately compresses and decompresses (or rarefies) the air surrounding it. Air is elastic, so a group of compressed air molecules tends to spring back, compressing the next group of molecules in turn. Thus, the effect of the vibrating object radiates outward in waves of compressions and rarefactions. At any point in the surrounding area, the pattern of these air-pressure differences is the same as the object's vibration, delayed only by the time it took to arrive at that point.

When such waves strike an object, they may be reflected or absorbed. Or, since they contain energy, they may set the intervening object in motion; that motion will follow the pattern of the air's compression and rarefaction, and hence that of the original vibrating body. The air-pressure differences are said to be **analog**s of the original body's motion, and the second body's induced motion is analogous to both.

Such fluctuations, whether of air or of solid bodies, have two properties. The amount a body is displaced from its resting position when vibrating, or the pressure difference between a compression or rarefaction and normal air pressure, is called **amplitude**. And the number of such alterations over time is called **frequency**. If a body vibrates within a certain frequency range, sending a pressure analog through the air, and if the wave hits our eardrums, we hear the pressure variations as sound. The greater the frequency, the higher the pitch; the greater the amplitude, the louder the sound.

Bell and Edison

During the nineteenth century, a number of scientists and inventors reasoned that the energy in a sound wave could be harnessed to drive

devices that would either carry sound over long distances or preserve it in a permanent medium. Two figures in particular can be considered the fathers of audio: Alexander Graham Bell and Thomas Edison.

Prior to their seminal inventions, the need for long-distance communication had been met by the telegraph. This had a major impact, as it provided virtually instant contact



across the country and around the world, but it was a very elementary device. The sender of a message translated it into a simple code of long and short pulses, which he then tapped out on a "key" that was really nothing but a switch to turn an electrical current on and off. At the other end of the wire, a device made a clicking sound whenever the power was turned on or off; by judging the length of time between clicks, the receiver could read the code, turning it back into words.

Bell's innovation was a method of replacing this on-and-off system with one that used a variable current whose fluctuations were determined by sound at the sending end. He devised a capsule filled with carbon granules, one surface of which was a membrane that could vibrate in response to sound. As the membrane moved, it varied the pressure on the carbon in the capsule, changing its electrical characteristics.

Feeding electricity through this variable resistor altered the current in step with the variations, resulting in an electrical analog of the original sound. Bell had invented the microphone.

Edison was more interested in *storing* sound than in carrying it over long distances. His device used the energy in sound to move a diaphragm attached to a movable stylus that could carve a pattern in a suitable surface, creating a physical analog of the sound. A needle placed in this varying groove and connected to a somewhat larger diaphragm could reconvert the pattern to sound. Edison's machine, for the first time, preserved sounds rather than instructions for making sounds. It **recorded** rather than coded, and it revolutionized our access to music and speech from the past.

Enter Audio

Edison's phonograph was very primitive by today's standards. All the energy for making a recording had to come from the sound itself, and all the playback energy had to be contained in the record's groove. The whole system was mechanical. It was years before the process was electrified, in the late 1920's, and that electrification can be taken as the birth of true audio.

Electrical recording became a reality when a version of Alexander Graham Bell's microphone, connected through an amplifier, was used to drive the stylus cutting a record. The amount of power available could now be controlled electrically, rather than simply by playing or singing louder, and multiple microphones could be employed and mixed at different levels. Soon afterwards, the electrical pickup and the dynamic loudspeaker revolutionized recorded music at the playback end. While there have been many refinements in the intervening sixty years or so, most of the essentials of a modern sound system existed from that time on.

The introduction of electrical circuitry to the reproduction of music, through both the phonograph and the radio, which was making its debut as a form of public entertainment at about the same time, changed forever the nature of home

T H E B A S I C S

entertainment equipment. What had been a fairly simple acoustical/mechanical device now became much more complex and its parts more specialized. The original phonograph was a single "thing" that turned sound waves into record grooves—and vice versa—more or less directly. Now the process involved what would increasingly be thought of as a **music system**—a chain of elements that sequentially recorded, transmitted, and reproduced sound.

The Reproduction Chain

A fairly convoluted process carries a sound from a recording artist to your ears. For part of the trip, the information travels as sound: from a singer's vocal cords to a microphone, for instance, influenced in various ways by reflections and other physical characteristics of the studio or concert hall where the performance takes place. And once your loudspeakers have reconverted the recorded information to sound, it is again affected enormously by physical factors in the listening room, such as speaker placement, room dimensions, furnishings, and the like. All the forces that come to bear at the beginning and end of the reproduction chain, when the sound is actually sound, are usually termed **acoustics**. In between, we speak of **audio**.

Audio is generally considered to be a branch of consumer electronics, but, in fact, electronics plays

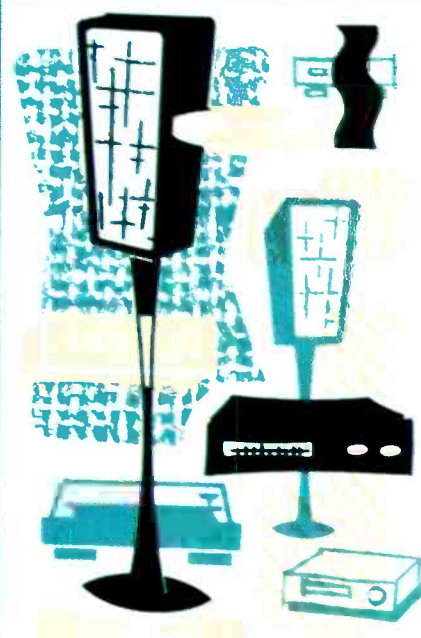
only one role in an audio system. There are many things that can happen to a signal on its way from the studio to your speakers. At several points it must be **transduced**, or converted from one form of energy to another, usually mechanical to electrical or vice versa. A microphone generates an electrical analog of the sound waves reaching it, a record cutter converts the electrical signal to stylus motion that creates the undulations in the record groove, a phono cartridge reconverts this groove to its electrical equivalent, and speakers and headphones convert that electrical signal to sound. The heads in a tape recorder convert electrical variations to magnetic ones and back again.

Signals can also be **amplified**: made louder, either as a whole, as with a volume control, or selectively, as with an equalizer or tone control. Audio signals can be stored, or **recorded**, magnetically on tape, physically on vinyl, optically on film, or digitally. The audio information can be **processed** as well: altered as to balance, level, phase, or what have you. Audio signals can also be **created** from scratch, as by a synthesizer. They can be **transmitted** over short distances by wire or long ones by modulation of a radio signal. To some extent, almost all of these things happen whenever an audio system is used, and each step requires a separate part of the audio chain.

Audio Now

At one time, listening to music in the home was a fairly simple pursuit: You turned on the radio or put on a record, most likely using the same device for both purposes. But for the past forty years or so, the pursuit of quality sound has increasingly required a more sophisticated sort of equipment, almost always containing a variety of specialized **components**.

The options have grown incredibly in just the past few years. Hi-fi video sound and surround-sound decoders have brought us close to a "marriage" between audio and video, at least for some types of entertainment. More and more consumers are expecting to hear in their automobiles the same sort of quali-



ty they enjoy at home, and the equipment to satisfy that desire proliferates. Home stereo equipment, even after all these years, continues to push the limits of technical performance, and **high-end** equipment is perhaps even more popular today than it was during the hi-fi boom of the 1960's and 1970's.

And the recording system itself is being revolutionized by **digital audio**, a return to coding rather than recording in which the recorder takes down the original signal in something akin to musical notation so that the player can re-create a virtually identical signal from scratch.

It has been said that audio is one of the most "technical" fields most consumers will ever encounter. It lives on specifications and technical terminology, and someone who doesn't have some grasp of how things work and what the words mean is at a considerable disadvantage when it comes to making a sensible purchasing decision. Even people who are knowledgeable about sound equipment inevitably have gaps in their understanding, if not actual misconceptions.

In the next few issues, we will try to shed some light on the technicalities, the vocabulary, and the principles of high fidelity today, starting from the ground up.

NEXT MONTH: Basic specifications and principles of operation.





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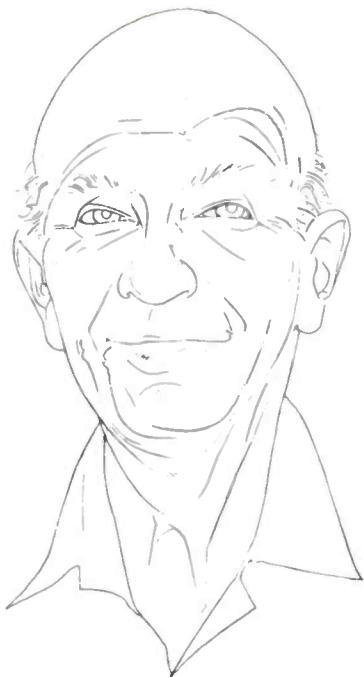
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by Julian Hirsch



POLARITY REVISITED

FEW, if any, of my "Technical Talk" columns have drawn as vigorous a reader response as "Is Polarity Audible?" (May), I was deliberately dogmatic in stating that polarity is a very "trivial matter in audio reproduction" (although I firmly believe that to be the case), so a strong response was not surprising. In fact, I often enjoy playing the devil's advocate, finding that the best way to elicit a lively reaction on almost any controversial subject. The technique worked most effectively in the present case.

All those who wrote disagreed with my views, some quite strongly, citing their personal experiences to contradict mine. Strangely, I found the letter from a reader who cited psychoacoustic experiments reported in the *Journal of the Audio Engineering Society* to be the least convincing. Like almost all such investigations, those cited relied heavily on the use of special test signals whose asymmetrical waveforms were designed to reveal the

effects of polarity on the sound. No one, least of all me, would question the validity of such tests, but my discussion dealt with musical programs that are conventionally recorded—that is, using several microphones—a case in which the AES article stated that "the effect [of polarity reversal] is *much* more subtle" (emphasis in the original).

Another reader, Dr. Charles Zeilig of Denver, said that he became aware of the importance of correct polarity when he heard a "not too good" recording of a hammer dulcimer just after he had heard one played live by the same performer at an outdoor fair. In the recording, each stroke of the hammer had a dullness that he had not heard in the live performance. After reversing his speaker leads, he found that the dullness had been replaced by the "bell-like purity" that he remembered from the live performance.

He described the effects of polarity reversal as "highly variable, ranging from difficult to detect at all, to difficult to decide which [polarity] sounds more pleasing, to clearly preferable." Although the effect is dependent on the reproduction equipment as well as on the recording methods (simple miking being preferable), he finds that polarity reversal not only causes dullness in the initial transients of certain instruments but also affects the front-to-back positioning of instruments within the sound field and the intelligibility of vowels and consonants in human speech and song.

Dr. Zeilig, having established his clear preference for one polarity or the other with a number of records, contacted the record companies that made them. He found that in each case where the polarity of the original recording was controlled and known, he preferred the "plus" (natural) polarity in his playback.

To me, Dr. Zeilig's experience seems to be the most convincing evidence that, under the right conditions, maintaining absolute polarity through the recording and playback processes can affect a listener's perception of the final sound, and that he is likely to prefer the original "absolute" polarity when such exists. On the other hand, these effects are often so subtle that they rank

very low on my list (and, I suspect, most people's) of what is wrong with reproduced music.

Another correspondent stated that he was not concerned with whether inverted polarity can be heard. He pointed out that "Since there are standards [for] proper polarity within microphones [and] systems, it is just a matter of doing it right." Therefore, he said, quite reasonably, "Let's do it right." As he put it, "I prefer to listen to the music rather than for all the things that may not be 100 percent correct, but I do want my system to be as accurate as possible, within my means. . . ."

I could hardly agree more, since that is very nearly my personal philosophy. My chief difference with this reader is that I cannot imagine how one can define, let alone establish, the "accuracy" of music reproduction in one's home when it was originally performed and recorded elsewhere, usually without the listener's having been present. Therefore, in the absence of any possible standard of accuracy (unless the recording in question was indeed made in the same room where it is being played back), I look for the sound that seems most believable and pleasing to me.

So, let's get the matter of absolute polarity straightened out once and for all, if possible. I do not question that there are a number of people who can hear the difference between the two polarities in sound reproduction and even have a consistent preference for one over the other (Dr. Zeilig's experience suggests that "correct" polarity may well be the preferred choice, which certainly seems logical). But how *important* these effects are is a matter for each person to decide for himself.

As with everything else in high fidelity, every person should make the choices that please him the most. Other people's dogmatic opinions, as opposed to provable statements, should *always* be viewed skeptically, and I include opinions expressed by me or by any other writer or reviewer. We are all fallible human beings, and in a field such as hi-fi, where all is illusion, each person's view is as good—for him—as any other's. □



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SANSUI VINTAGE CD-X711 COMPACT DISC PLAYER

Julian Hirsch, Hirsch-Houck Laboratories

SANSUI'S CD-X711 compact disc player is part of its Vintage Series of components. In addition to having a full array of operating features, a handsome design, and robust construction, the CD-X711 is one of the first CD players using "1-bit" digital-to-analog (D/A) conversion to reach this country.

Sansui calls its D/A technique a Linear and Direct Conversion System (LDCS). It is derived from the multistage noise-shaping system (MASH) originally developed by the Central Research Laboratory of Nippon Telegraph and Telephone. The aim of these systems is to reduce or eliminate the low-level distortions typical of conventional D/A converters. A principal cause of these distortions is imprecision in the resistor network that is at the core of any multibit D/A converter. In particular, an error in converting the most significant bit (MSB) of each 16-bit digital "word" from the compact disc, the one that determines the polarity of the analog output signal, can cause a jog in the output waveform corresponding to relatively high distortion in the low-

est-level portion of the signal. The audibility of this effect is a subject of debate, but most manufacturers of compact disc players are devoting considerable effort to minimizing it.

Sansui's LDCS technique eliminates the need for a resistor network, and thus the possibility of errors introduced through it, by converting the 16-bit pulse-code-modulated (PCM) data stream from a CD into a much larger, but simpler, 1-bit pulse-width-modulated (PWM) data stream. Like the PCM signal, the PWM signal has a constant amplitude, and each bit in it is simply an on ("1") or off ("0") pulse, but the *duration* of each pulse represents the instantaneous amplitude of the original analog audio signal. The PWM data can therefore be converted from digital to analog form directly, by simply removing the ultrasonic components with a low-pass filter. A third-order noise-shaper in the circuit greatly reduces noise in the audible range without affecting frequency response. The system is inherently free of the crossover-distortion effects of conventional D/A converters and does

not require their costly high-precision resistor networks.

Besides LDCS, the CD-X711 has all the features you would expect in a deluxe CD player, including bidirectional fast scan and track skipping, direct access to any track or numbered index point, and repeat of a track, the entire disc, or any selected segment of the disc. It can be programmed to play up to twenty tracks in any order (indexed passages cannot be programmed, however), and the user can check or modify the program even while it is playing. There is a random-play mode for either an entire disc or a programmed sequence of tracks and facilities for timer-controlled operation in either the normal or random-play mode.

The CD-X711 has two modes of direct track access: normal and direct. Normal mode, the default condition, requires that the play key be pressed within 4 seconds after a track has been selected using the numerical keypad; if a longer time elapses, the selection is canceled. A button changes access to the direct mode, in which playback begins automatically as soon as a track is selected.

Ordinarily the display window shows, in large blue-white digits, the current track and index numbers and the elapsed time in that track. Smaller characters show the numbers of all unplayed tracks on the disc and the status of the other con-

TEST REPORTS

trols, including pause and stop, auto-space and auto-pause, the repeat modes, music scan, and random play. The music-scan function, which automatically plays the first few seconds of each track, has a default duration of 10 seconds, but it can be set to any time between 1 and 59 seconds. The selected time appears in the display window.

The display-mode button toggles the display through three additional time-display modes: remaining and elapsed time on the current track, elapsed time on the disc and on the track, and remaining time on the disc and elapsed time on the track. The current track number as well as the numbers of any unplayed tracks are always visible.

The CD-X711 has a Compu-Edit feature that can determine which tracks on a disc (up to twenty) will fit into the available recording time on a tape. It can then play the whole sequence automatically, pausing so you can flip the tape.

The front-panel headphone jack

has its own volume control. The rear apron of the CD-X711 has gold-plated unbalanced and balanced cannon-connector analog outputs and both coaxial and optical digital outputs. Cables are available to connect the CD-X711 with certain Sansui integrated amplifiers having balanced input connectors, for maximum immunity to external hum and noise.

The player comes with an infrared remote control that duplicates all its controls except the power switch, timer switch, and headphone volume control. It also has a DISPLAY button, not on the player, that completely switches off the display and its driving circuits in order to reduce noise from their switching waveforms even further.

The Sansui CD-X711 measures 17 inches wide, 15¾ inches deep, and 5 inches high, and it weighs 22 pounds. Its front panel is finished in glossy black with gold and white markings. The motorized disc drawer, just high enough to hold a disc, is

also compatible with 3-inch CD's. The drawer glides in and out at the touch of the open/close button, and it can also be closed by touching the front of it lightly. Price: \$1,000. Sansui Electronics Corp., Dept. SR, 1250 Valley Brook Ave., Lyndhurst, NJ 07071.

Lab Tests

The Sansui CD-X711's frequency response was flat within +0.2, -0.28 dB from 7 to 20,000 Hz. The de-emphasis circuit's response error was about -0.33 dB at 16,000 Hz. Channel separation was 100 to 110 dB below 1,000 Hz, decreasing slightly to 95 to 100 dB at 20,000 Hz (the two channels were slightly different). The maximum interchannel phase shift was 0.5 degree at 20,000 Hz. The low-level linearity of the playback was exceptional, with maximum errors of a fraction of a decibel from -70 to -90 dB. Output from a 0-dB signal was 2.06 volts, and the frequency (speed) error was -0.0013 percent. Harmonic distortion was about 0.003 percent over a wide range of frequencies and signal levels.

A spectrum analysis of the output noise showed levels of -110 to -120 dB between 250 and 20,000 Hz and below 50 Hz. The noise included power-line-hum components, reaching -100 dB at 60 and 180 Hz and -105 dB at 120 Hz. The wide-band noise level, referred to a 0-dB signal, was -103 to -104 dB in the two channels, and switching off the display reduced the noise in each channel by about 0.25 dB. The quantization noise was -92.2 dB, and the dynamic range (EIAJ) was 98.5 dB.

The CD-X711 tracked the maximum-amplitude error (900 micrometers) on the Philips TS5A test disc. It tracked the 750-micrometer defect on the Pierre Verany #2 disc but showed dropouts at the 1,000-micrometer level. The cueing accuracy of the player was excellent, and its slewing time of 2.3 seconds was typical of today's top CD players. Although it withstood very hard blows to its sides without mistracking, a moderate rap on the right side of the top cover caused numerous dropouts. Interestingly, the left side (over the disc) was much more

FEATURES

- Linear and Direct Conversion System that transforms oversampled 16-bit digital signal into 1-bit data stream before D/A conversion
- Third-order noise shaping
- Programmable to play up to twenty tracks in any order
- Direct keypad access by track and index numbers
- Switchable auto-space to insert 4 seconds of silence between tracks
- Switchable auto-pause for stop between tracks
- Accepts CD-3's without an adaptor
- Music scan to sample each track before proceeding (can be adjusted from 1 to 59 seconds)
- Compu-Edit to program a sequence of tracks for a given tape length
- Random playback for entire disc or programmed selections
- Repeat of a track, entire disc, or selected segment
- Timer operation for normal or random playback
- Gold-plated RCA-jack and balanced cannon-connector analog outputs
- Optical and coaxial digital outputs
- Remote control for all normal functions; also has display shut-off
- Front-panel headphone jack with volume control

LABORATORY MEASUREMENTS

Maximum output level: 2.06 volts
Total harmonic distortion at 1,000 Hz: less than 0.003% from 0 to -80 dB
Signal-to-noise ratio (A-weighted): 103 dB
Channel separation: 100 to 110 dB below 1,000 Hz, 95 to 100 dB at 20,000 Hz
Maximum phase shift (from 5,000 to 20,000 Hz): -0.5 degree at 20,000 Hz

Frequency response: +0.2, -0.28 dB from 7 to 20,000 Hz
Low-level linearity error: less than 1 dB down to -90 dB
Cueing time: 2.3 seconds
Cueing accuracy: A
Impact resistance: top, B; sides, A
Defect tracking: tracked 900-micrometer defects on Philips TS5A test disc

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(Atlantic) 379-669

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Glory (A&M) 381-699 | Tone-Loc —Loc'ed After
Dark (Delicious Vinyl)
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(Columbia) 378-893 | Bobby Brown —Don't Be
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resistant to impact. The headphone volume was very good, probably the best we have heard from a CD player to date.

Comments

Without a doubt, the Sansui CD-X711 is one of the most attractive and feature-laden CD players we have used. Its handsome styling was complemented by silky-smooth mechanical operation. The disc drawer opened almost instantaneously and in total silence, and further operation of the player confirmed the impression of exceptional precision in construction.

We found nothing in the performance of the CD-X711 to criticize: Even its sensitivity to impact on the top cover was apparent only in comparison with other top players. We were impressed at finding, for the first time, a measurable (though inaudible) reduction in noise when the display was switched off. And we were very pleased with the player's really *usable* headphone output, which generated enough volume in our AKG K340 phones to blot out external sounds completely, thus conveying something of the impact of a CD to the headphone listener.

When we compared our test data on the Sansui CD-X711 with test data from some other CD players, we found that just about every one of its measurements, good as these were, could be matched or surpassed by one or another of the competing models. But, as everyone should know, people don't listen to specifications and test data.

Sansui is not alone in claiming a superior sound quality for its product, although it is next to impossible to confirm such claims in any meaningful way. The sonic ease and smoothness of this player made it easy to characterize its sound as strikingly free of the harshness or stridency that some people have ascribed to "digital sound." But the same could be said of a number of other players. Certainly we have never heard better sound from any other CD player than we heard from the CD-X711, and it is a thoroughly excellent product in all other respects as well.

Circle 140 on reader service card



MISSION CYRUS 781 SPEAKER SYSTEM

Julian Hirsch, Hirsch-Houck Laboratories

THE Cyrus 781 from Mission Electronics is a two-way vented loudspeaker system designed for an optimum combination of audio quality, high sensitivity, and moderate cost. The system's rated frequency response is 70 to 20,000 Hz \pm 1.5 dB, with the bass response down 6 dB at 47 Hz. Nominal impedance is 6 ohms, and

the rated sensitivity is 90.5 dB sound-pressure level (SPL) at 1 meter with an input of 2.83 volts.

The 6¾-inch woofer, located conventionally at the top of the speaker board, features a mineral-loaded polypropylene cone driven by a long-throw voice coil. The woofer basket is made of die-cast magnesium alloy. The bass port,



The CDV 488 plays all six disc formats:
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AudioVideo

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Remarkably, its high standards in digital video are matched by its specifications in audio. It features the latest Philips Select Grade TDA-1541-A SI dual D/A Converter System, widely regarded as the premier D/A conversion technology available today.

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which has a flared opening, is located at the bottom of the panel.

Between the woofer and its port is the $\frac{3}{4}$ -inch soft-dome tweeter, whose voice coil is cooled and damped by ferrofluid. The unconventional inverted positioning of the drivers is designed to maintain the correct phase relationship between the woofer and tweeter outputs as they reach the ears of a seated listener. According to the manufacturer, this design also directs the sound at the crossover frequency (3,500 Hz) toward the listener instead of toward the floor. Like many speakers, the Cyrus 781 delivers its best performance when mounted off the floor and several feet from the side walls, and Mission offers suitable easily assembled stands for that purpose.

The enclosure is built entirely from $\frac{3}{4}$ -inch medium-density fiber board, internally lined and packed with acoustic damping materials. Its rear panel contains two pairs of five-way binding posts, separately connected to the tweeter and woofer crossover networks but normally paralleled by jumper links. By removing the jumpers, each driver can be connected to its own amplifier (biamped) or through a separate cable to a common amplifier

The room response of the Mission Cyrus 781 speakers was unusually flat and wide and strikingly free of the usual room-boundary effects.

(biwired). Mission recommends biwiring and can supply a special dual cable assembly for that purpose. About 15 to 20 feet long, it resembles a pair of over-size twin-lead antenna cables fitted with husky banana plugs; the two input ends are joined, but the ends going to the speakers have separate plugs.

The Cyrus 781's cabinet, available finished in black-ash or walnut veneer, measures 17 inches high, 9 inches wide, and 11 inches deep. Each speaker weighs 17½ pounds. The optional Cyrus stands, made of black-finished steel, are about 20 inches high; each has three needle-

pointed spiked feet that can provide a stable base on any floor. Price: Cyrus 781 speakers, \$499 a pair; stands, \$199 a pair. Mission Electronics USA, Dept. SR, 18303 8th Ave. S., Seattle, WA 98148.

Lab Tests

The room response of the Mission Cyrus 781 speakers was unusually flat and wide and strikingly free of the usual room-boundary effects. We placed them on the Cyrus stands for both measurement and listening. The combined close-miked outputs of the woofer and port were flat within ± 2.5 dB from 35 to 800 Hz. The composite response curve was flat within ± 2 dB from 36 to 20,000 Hz, which is quite unusual for any speaker, let alone one in this price range.

The Cyrus 781's measured sensitivity of 90.5 dB exactly matched the manufacturer's rating. There were identical 15-ohm impedance peaks at 25 and 75 Hz, and the minimum impedance of 4.2 ohms was at 200 Hz, which suggests that the rated impedance probably should be 4 ohms instead of 6 ohms. The maximum impedance of 26 ohms occurred at 1,800 Hz.

Our quasi-anechoic FFT response measurements confirmed the smoothness and broad extension of the system's frequency response. Its horizontal dispersion was very good up to 10,000 Hz, with the usual divergence at higher frequencies between the output on-axis and 45 degrees off-axis. The group-delay variation was less than 0.2 millisecond from 3,500 to beyond 20,000 Hz (the tweeter's range). The woofer's distortion at an input that would produce a 90-dB SPL in our sensitivity measurement was about 0.35 percent from 130 to 900 Hz, rising to 2 percent at 50 Hz and 3.5 percent at 40 Hz.

We measured the power-handling ability of the woofer at 100 Hz, where its sound began to show some hardness with a single-cycle input of 200 watts into its 7.5-ohm impedance. The manufacturer's recommended amplifier power rating of 25 to 100 watts per channel appears to be conservative and is very realistic in view of the speaker's relatively high sensitivity.

Comments

The art of loudspeaker design has advanced to the point where many speakers, in all price ranges, sound good. But since all speakers sound different to a greater or lesser degree, there will always be individual

The smooth, well-dispersed highs never sizzled or sounded strident, and the midrange was as unobtrusive as the rest of the spectrum.

preferences. In our personal judgment, the Cyrus 781 is one of the best-sounding speakers in its price range. It bore up well in direct comparisons with some of our favorite speakers, which cost three to five times as much.

Although we were unable to listen using the special biwiring cables that Mission sent with the speakers, since they were not long enough to span the gap from our amplifier to the speakers when these were placed for listening, we did use them for our measurements. These solid-conductor cables appear to be a practical solution to the biwiring connection problem.

As might be expected from our frequency-response, dispersion, and distortion measurements on these speakers, their sound was highly neutral in character. The bass was there to a surprising degree, but wholly without mid-bass boom or chestiness on voices, and there was very low bass distortion for speakers of this size. The smooth, well-dispersed highs never sizzled or sounded strident, and the midrange was as unobtrusive as the rest of the spectrum. In other words, we found the Mission Cyrus 781 as neutral-sounding a speaker as one could hope for.

It is always a pleasant surprise to find a modestly priced product, based for the most part on recognized design principles, that manages to outperform its competition. Mission obviously has done a lot of things right in the Cyrus 781, and the results speak for themselves.

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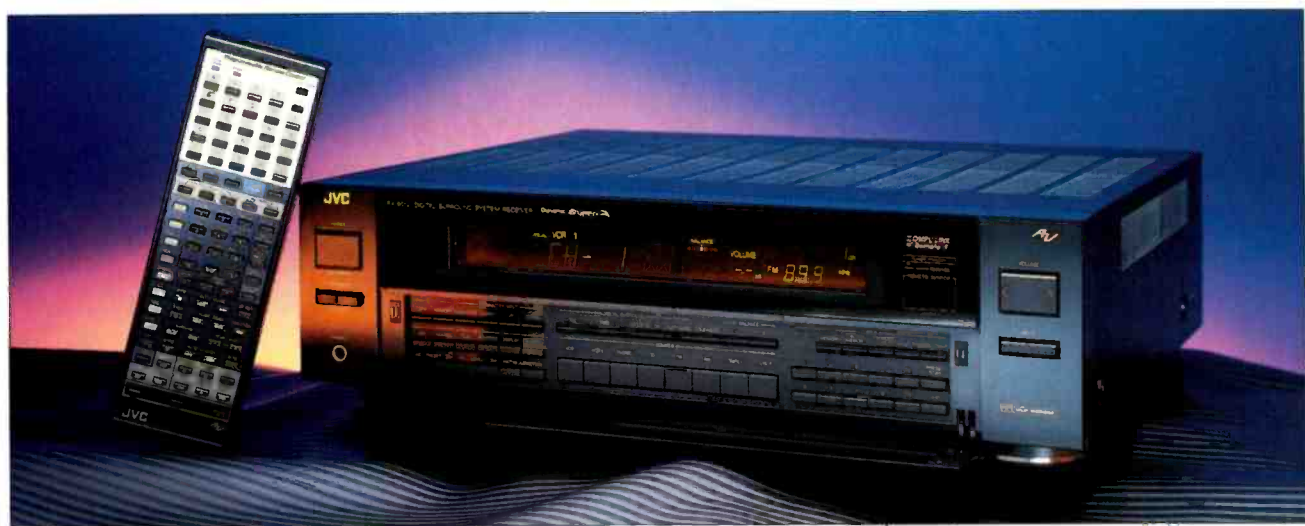
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JOCK LEUNG

JVC RX-801V AUDIO/VIDEO SURROUND-SOUND RECEIVER

Julian Hirsch, Hirsch-Houck Laboratories

THE JVC RX-801V receiver requires only the addition of four speakers and external program sources to form a complete audio/video surround-sound system. It contains a digital-synthesis AM/FM tuner, a highly flexible preamplifier with a seven-band graphic equalizer, a Dolby Surround decoder, digital signal processing to simulate hall or stadium environments, and two amplifier sections. The main (front) stereo amplifier is rated at 100 watts per channel into 8 ohms, from 20 to 20,000 Hz, with no more than 0.003 percent total harmonic distortion. The amplifier for the rear or side surround speakers is rated at 12 watts per channel into 8 ohms, from 20 to 20,000 Hz, with 0.7 percent total harmonic distortion. In four-channel operation, the power rating of the main amplifier is reduced to 90 watts per channel.

The receiver has five high-level audio inputs—CD, TAPE 1, TAPE 2, VCR 1, and VCR 2—plus its built-in AM and FM tuners and an input for a moving-magnet phono cartridge. Tapes can be dubbed from either of the audio recorders to the other, and the video signal from either VCR can be sent to an external monitor.

All of the front-panel controls (more than fifty of them) are short-travel pushbuttons, grouped by function and legibly marked. Except for the power switch, volume control, mute switch, and speaker-selector buttons, all the controls are behind a hinged panel that swings down for access. The eight input selectors are at the lower center of the panel along with the controls that select the surround mode (Hall, Stadium, or Dolby) and the delay time for the rear channels. There are selector keys for forty preset stations and a preset-scan button that selects each preset in sequence, playing it for a few seconds before proceeding. The tuner also has an Auto Memory feature, which automatically scans the AM or FM band and sequentially stores the frequencies of receivable stations in the preset memories.

The left side of the panel has the controls for the receiver's seven-band graphic equalizer, which JVC calls a Sound Effects Amplifier, or SEA. The controls allow a ± 10 -dB adjustment (in 2-dB steps) at center frequencies of 63, 160, 400, 1,000, 2,500, 6,300, and 16,000 Hz. Five of these curves—identified as HEAVY, CLEAR, SOFT, MOVIE, and VOCAL—

are factory-set, but the other five are user-programmable. Just above the SEA controls are four buttons that allow the user to assign a title of up to five characters, such as a station's call letters, to any of the tuner presets and stored equalizer curves.

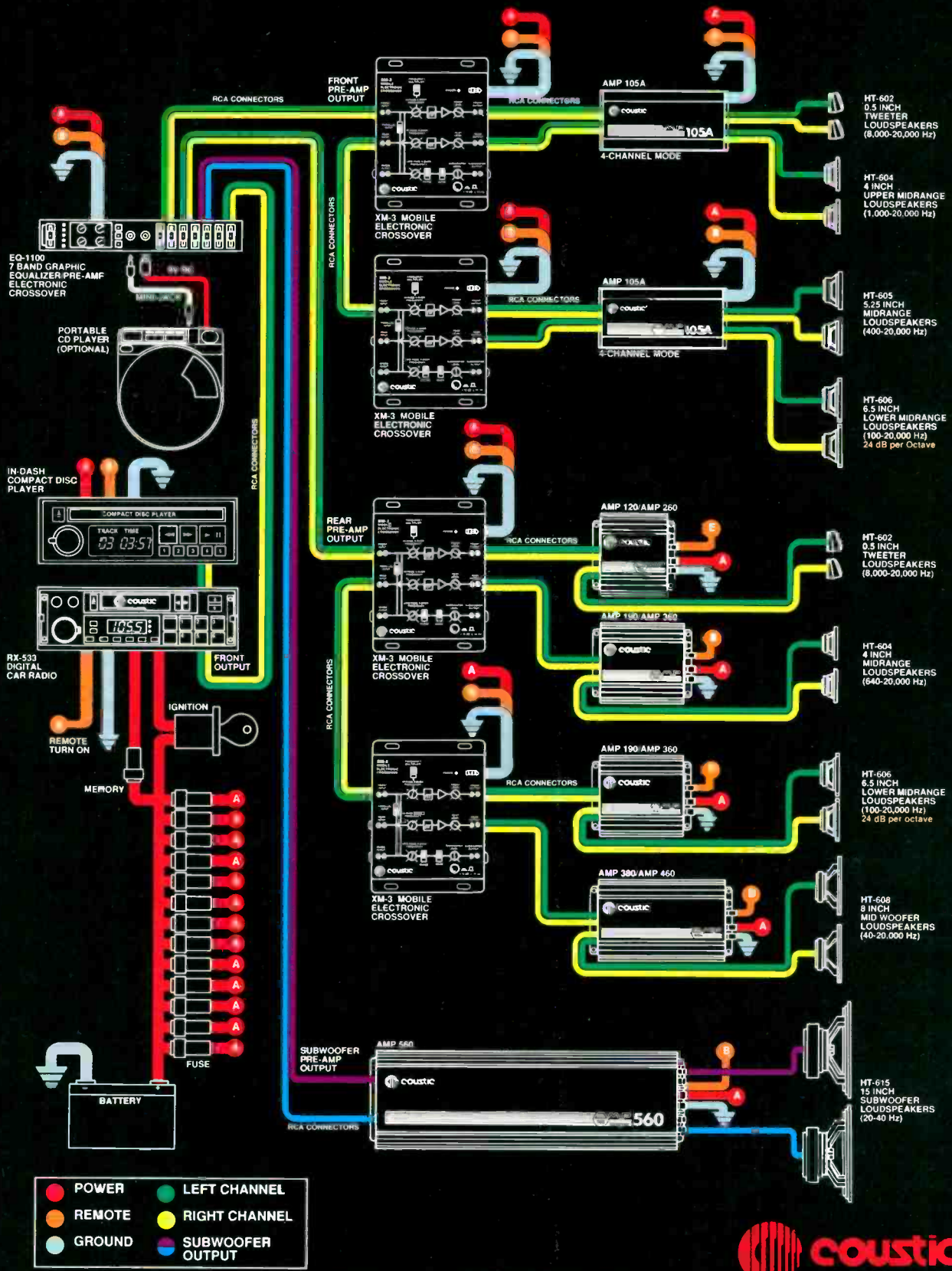
In addition to the name of the input source, or the frequency and title of tuner selections (frequency and band for nonpreset stations), the fluorescent display window of the RX-801V shows the volume setting in decibels below maximum, from 0 to -72 dB, plus a full-off setting. Letters from A to G, plus a title if any has been stored, identify the selected SEA response.

The rear apron of the RX-801V has phono jacks for the audio and video inputs and outputs. Rear-channel preamp-out jacks are provided for connecting an external amplifier if more power is needed. There are binding posts for a 300- or 75-ohm FM antenna and spring clips for the wires of the AM loop antenna supplied with the receiver. Also on the back panel are a small surround-balance adjustment knob, two switched AC outlets, and insulated spring connectors for two pairs of front speakers and one set of surround speakers.

The receiver has connectors for JVC's Compu-Link Synchro, a remote-control system that integrates the RX-801V's operation with that of compatible JVC components, including a CD player, cassette deck, DAT deck, and record player. Turning on any one of them automati-

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cally switches the receiver to the corresponding input and the appropriate control settings for that component—such as EQ, volume, sur-

round, etc.—that were previously established and stored in memory. The receiver is supplied with a system remote control that duplicates

FEATURES

- Digital-synthesis AM/FM tuner with forty station presets
- Preset scan
- Auto Memory to enter all receivable stations as presets
- Separate stereo amplifier sections for main (front) and surround (rear or side) channels
- Dolby Surround decoder
- Digital delays for Hall and Stadium surround modes
- Seven-band graphic equalizer (Special Effects Amplifier) with memories for ten preset response characteristics, five factory-set and five user-programmable
- REVERSE button to invert selected response characteristic
- FLAT button to switch out equalizer
- SEA REC button to insert selected equalization into recording outputs
- Memories for five-character titles for tuner presets and user-programmed equalizer curves
- Inputs for phono, CD, two audio tape decks, and two VCR's
- Recording outputs and cross-dubbing facilities for audio decks and VCR's
- One video output to monitor
- Outputs for two pairs of main speakers, switchable from front panel, and one pair of surround speakers
- Display of receiver's complete operating status and all control settings
- Connectors for Compu-Link Synchro operation of compatible JVC components
- Supplied wireless remote control for complete system operation; can also learn commands of other control units
- Two switched AC outlets
- Connections for 300- or 75-ohm FM antenna, supplied loop AM antenna

LABORATORY MEASUREMENTS

Amplifier Section

1,000-Hz output power at clipping: main channels, 121 watts into 8 ohms, 166 watts into 4 ohms, 145 watts into 2 ohms; surround channels, 15 watts into 8 ohms

Clipping headroom (relative to rated output): main, 0.83 dB; surround, 0.97 dB

Dynamic power output (main): 168 watts into 8 ohms, 230 watts into 4 ohms, 132 watts into 2 ohms

Dynamic headroom (main): 2.25 dB

Maximum distortion (20 to 20,000 Hz into 8 ohms): 100 watts, 0.0081% at 20,000 Hz; 50 watts, 0.01% at 20,000 Hz; 10 watts, 0.021% at 20,000 Hz

Sensitivity (for a 1-watt output into 8 ohms): CD, 22 mV; phono, 0.22 mV

A-weighted noise (referred to a 1-watt output): CD, -83 dB; phono, -76.5 dB

Phono-input overload: 64 to 80 mV from 20 to 20,000 Hz

Phono-input impedance: 50,000 ohms in parallel with 100 pF

RIAA equalization error: +0.9, -0.2 dB from 20 to 20,000 Hz

Equalizer range: ± 10 dB

Surround-channel frequency response: -3 dB at 30 and 7,000 Hz

Tuner Section (all figures for FM only except frequency response; measurements in microvolts, or μ V, referred to 300-ohm input)

Usable sensitivity (mono): 14.5 dBf (2.9 μ V)

50-dB quieting sensitivity: mono, 19 dBf (5 μ V); stereo, 41 dBf (37.5 μ V)

Signal-to-noise ratio at 65 dBf: mono, 68 dB; stereo, 65 dB

Harmonic distortion (THD + noise) at 65 dBf: mono, 0.1%; stereo, 0.14%

Capture ratio at 65 dBf: 1.1 dB

AM rejection: 73 dB

Selectivity: alternate-channel, 65 dB; adjacent-channel, 8 dB

Stereo threshold: 25 dBf (10 μ V)

Pilot-carrier leakage: 19 kHz, -70 dB; 38 kHz, -61 dB

Hum: -72 dB

Stereo channel separation at 100, 1,000, and 10,000 Hz: 44, 44 and 39 dB

Frequency response: FM, +0.3, -1.7 dB from 30 to 15,000 Hz; AM, +0.8, -6 dB from 60 to 2,200 Hz

most of its front-panel controls, including power and source switching. A number of the remote unit's keys are dedicated to the functions of compatible JVC CD players, VCR's, and audio tape decks. It also has a group of twenty-four keys that can learn up to forty-eight commands of infrared remote controls from other manufacturers.

The JVC RX-801V measures 17³/₁₆ inches wide, 15 inches deep, and 5 inches high, and it weighs 24 pounds, 5 ounces. Price: \$630. JVC, Dept. SR, 41 Slater Dr., Elmwood Park, NJ 07407.

Lab Tests

After an hour of preconditioning, which left the top of the receiver quite hot, its front-channel outputs clipped at 121 watts per channel into 8-ohm loads at 1,000 Hz. Although the receiver is not rated for lower load impedances, we measured the 4-ohm clipping level, which was 166 watts. We also tried the test with a 2-ohm load on one channel and 4 ohms on the other, but the receiver's line fuse blew at the clipping point. With only the measured channel driven, the 2-ohm clipping level was about 145 watts. The dynamic power output was 168, 230, and 132 watts, respectively, into 8, 4, and 2 ohms.

The 1,000-Hz distortion into 8 ohms decreased from 0.058 percent at 1 watt to 0.0065 percent at 100 watts and was still a low 0.008 percent at 120 watts, just before clipping occurred. The 4-ohm performance was similar, with slightly higher readings that were typically between 0.01 and 0.025 percent from 1 to 150 watts. Even the 2-ohm distortion remained tolerably low, ranging from 0.032 to 0.1 percent from 1 to 100 watts and reaching 0.5 percent at 140 watts (with only one channel driven). Into 8 ohms, distortion was virtually constant with frequency from 20 to 20,000 Hz, typically about 0.007 percent at the rated 100 watts output, 0.009 percent at 50 watts, and 0.02 percent at 10 watts. The slew factor exceeded our measurement limit of 25.

The audio frequency response was down about 0.2 dB at 20 and 8,500 Hz and 0.8 dB at 20,000 Hz. The individual equalizer curves had

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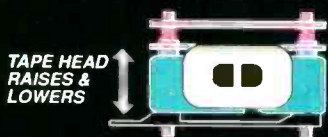
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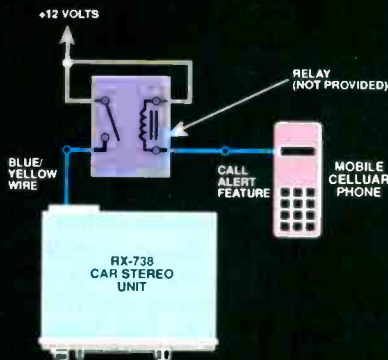
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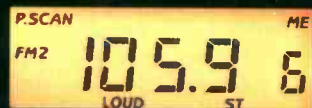


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the rated ± 10 -dB adjustment range at their nominal center frequencies, and the factory equalizer settings agreed with the values in the instruction manual. The RIAA phono equalization was accurate within ± 0.2 dB from 20 to 2,500 Hz, rising to $+0.9$ dB at 20,000 Hz. The loudness compensation boosted lows and highs moderately at levels of -20 dB or lower, with a maximum boost of 6 dB below 100 Hz and at 20,000 Hz.

When we measured the rear (surround) amplifier at 1,000 Hz into 8 ohms, its output clipped at 15 watts. At levels below clipping the distortion was far lower than rated, typically between 0.05 and 0.08 percent from 1 to 10 watts. The rear-channel response rolled off sharply at high frequencies, as required by the Dolby Surround standard. Response was essentially flat from 100 to 5,000 Hz, reaching -3 dB at 30 and 7,000 Hz. In the Dolby mode, a single time delay was used in the surround channels, adjustable in five steps from 15 to 30 milliseconds (ms). In the Hall mode, there were two delayed signals, the first adjustable from 7.5 to 18.5 ms and the second (at a slightly lower amplitude) varying from 17.5 to 26 ms. In the Stadium mode the initial delays were longer (22 to 28 ms), the second delay was constant at 55 ms, and a third varied from 58 to 64 ms as the initial delay was adjusted.

The tuner's FM frequency response was $+0.1$, -1.7 dB from 20 to 15,000 Hz. Channel separation measured about 40 dB or better from 100 to 10,000 Hz and a minimum of 33 dB at 15,000 Hz. The FM capture ratio was an excellent 1.1 dB, with an equally noteworthy AM-rejection figure of 73 dB. The image rejection of 57 dB was only average, as were the selectivity readings of 65 dB for alternate-channel (400-kHz) spacing and 8 dB for adjacent-channel (200-kHz) spacing. The muting and stereo thresholds were identical at 25 dBf (10 μ V). The FM usable sensitivity was 14.5 dBf (2.9 μ V), and the 50-dB quieting sensitivity was 19 dBf (5 μ V) in mono and 41 dBf (37.5 μ V) in stereo.

In mono, FM distortion was a low 0.1 percent at a 65-dBf input, and the minimum noise level was an

adequate but not especially low -68 dB. In stereo, the distortion was still a good 0.14 percent, and the noise level increased slightly, to -65 dB. The tuner's AM frequency response was $+0.8$, -6 dB from 60 to 2,300 Hz.

Comments

The JVC RX-801V's power-amplifier section proved to be both good and surprisingly rugged given that it is packed into a fairly compact receiver. Our treatment of it was rather rough, especially considering that it is not rated for operation into loads of less than 8 ohms, but overload relays and the line fuse provided effective protection.

JVC has been using its SEA equalizer circuits instead of conventional tone controls since the company entered the United States market many years ago. In the refined form featured in the RX-801V, the SEA is capable of much more versatile response tailoring than two- or three-band tone controls, and there's the added convenience of a memory system to store several preferred response curves as well as the ability to equalize tape-recording outputs when desired.

We were unable to confirm JVC's extremely low distortion rating for the amplifier section (0.003 percent) at EIA standard gain settings. Minimum distortion can be achieved only with the volume setting at maximum, a very impractical requirement. It was substantially higher than rated at the standard settings, and as the gain was further reduced, the distortion with a constant full-power output continued to increase. This effect is typical of the electronic volume controls we have tested, but in real terms its importance is slight—no source intended for use with this receiver is likely to overload its inputs so as to cause audible distortion at any normal setting.

The receiver's FM tuner section was competent or better in every respect and well above average in its capture ratio and AM rejection, which are important in terms of suppressing multipath interference. The forty station presets are close to a record number in our experience and probably amount to overkill for

most users. One thing is certain: No one is likely to run out of station memories with this receiver.

Although the hidden part of the RX-801V's control panel is fully occupied by buttons, the receiver is not particularly difficult to use if you study the comprehensive manual. The display window is exceptional in the amount of information it conveys and the ease of reading it. We had no difficulty reading the full operating status of the receiver from 12 to 15 feet away.

With the hinged door closed, covering most of the controls, the deceptively spare front of the RX-801V presents an unusually attractive appearance. Most people will probably prefer, as we did, to operate the receiver from its remote control. The design of the remote unit, however, is one of the weak points of this product. Although JVC has paid some attention to logically grouping the buttons—a formidable task for a unit as versatile as this one—the result is not quite successful. For example, most of the surround-sound controls are located among the tape-recording controls, but the surround on/off button is in another area of the remote control, with the equalizer and phono buttons. And though the markings and control colors are varied to distinguish different functions, this, too, is less than successful. When experimenting with the surround system, we preferred to alter the mode or delay and then make listening comparisons by switching the surround on and off. The illogical control placement complicated what should have been a simple procedure.

But the listening quality of the JVC RX-801V was good enough to make us forget its minor ergonomic shortcomings. Its many features worked as claimed, and it sounded excellent, with plenty of power and a smooth, bug-free response to the controls. While the surround-sound portion of this receiver is no match for a full-fledged digital signal processor, it did a surprisingly good job of enhancing the spatial quality of music. And the superb, informative display panel helped considerably to compensate for the idiosyncrasies of the remote control.

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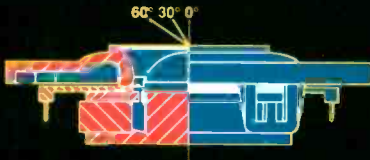
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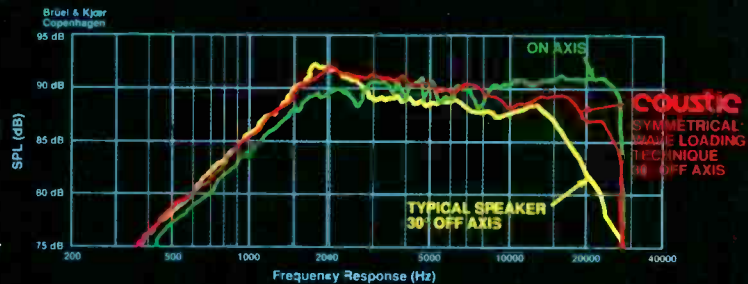
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MID WOOFERS: HT-604, HT-606, HT-605, HT-605

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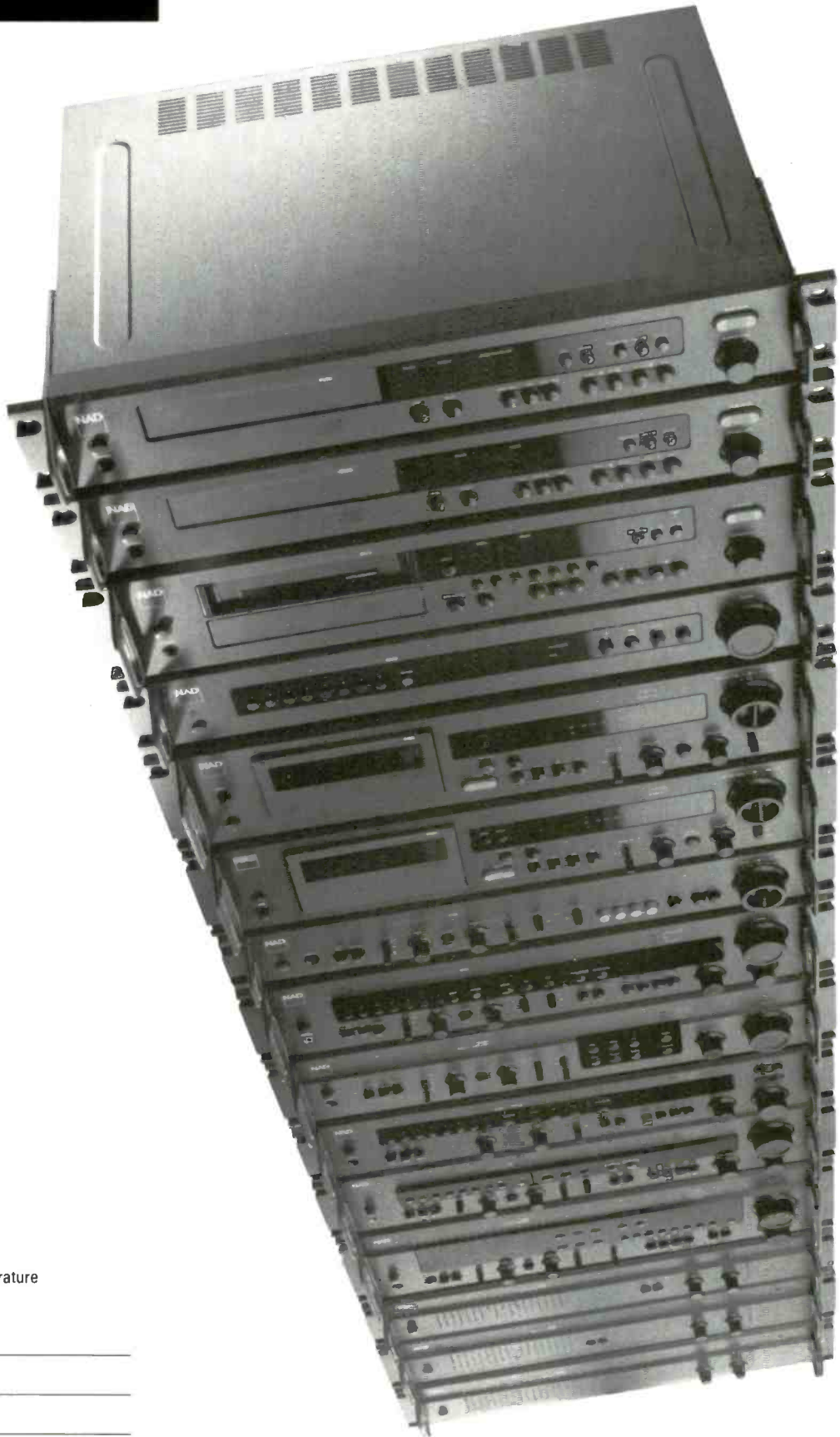


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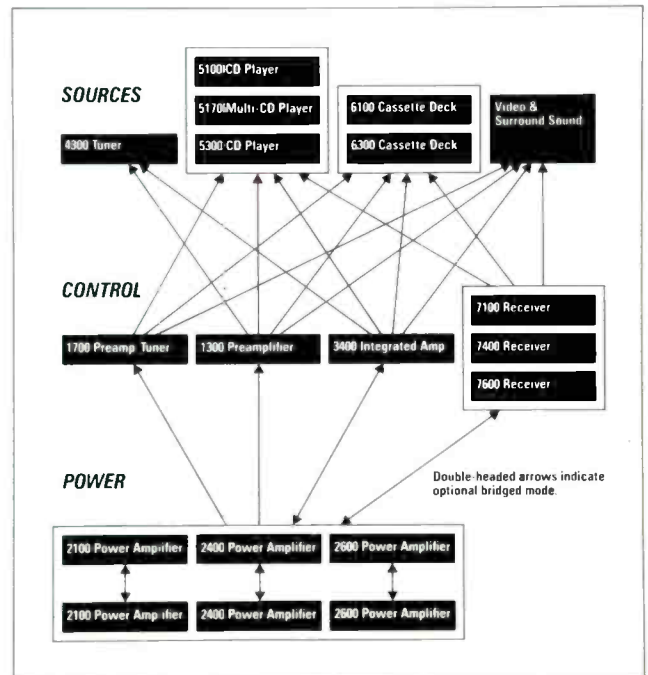
Don't junk the receiver, add an amplifier

When the time is right (you move your system to a larger room, or new living quarters, or acquire new speakers, for instance) add a second amplifier.

Why a second amplifier? Because every Monitor Series power amp (or receiver, or integrated amp) can be bridged into mono, with an impressive increase in power and dynamic range.

Our 100 watt amplifier alone, for example, provides up to 300 watts of precisely controlled dynamic power, due to our exclusive Power Envelope circuitry. Bridge it with another 100 watt amplifier and you'll have up to 500 watts of clean dynamic power for musical peaks.

The NAD Monitor Series is the only audio component system which provides this option *across the board*.



The Monitor Series provides numerous paths for enhanced listening. You start with a superb remote control audio system. You don't have to overbuy. And

you can upgrade your system repeatedly, without ever trading in. Your investment will never become obsolete.

Unified remote control

And all the while, no matter what size system you choose, you will be using our Unified Remote Control. This advanced design remote drives the entire Monitor Series,* and is a pleasure to hold in your hand and use.

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We invite you to visit one of our carefully selected dealers for a complete listening session. Call us at (617) 762-0202 for the name of your nearest dealer, or send the coupon for detailed literature, to: NAD(USA), Inc., 575 University Avenue, Norwood, Massachusetts 02062.

*The 5170 Multi-CD Player, due to its remote programming capabilities, has its own full-function remote control.



For the music, pure and simple.



JOCK LEUNG

PHILIPS CDV488 COMBI-PLAYER

Julian Hirsch, Hirsch-Houck Laboratories

THE Philips CDV488 is a digital disc player designed to play every currently produced form of optical audio or audio/video disc. It is compatible with 12- and 8-inch videodiscs (which Philips calls CD-V's) in either the CAV (constant angular velocity) or CLV (constant linear velocity) format, standard 5-inch CD-V's, and audio CD's in either the 5- or 3-inch size. Since some videodiscs have the audio recorded in both digital and analog forms, the CDV488 automatically selects the digital audio signals when they are available. If only analog signals are present, it reads those, and it provides the required CX processing if they are encoded with CX noise reduction.

The CDV488 processes digital audio recordings with four-times oversampling and 16-bit digital-to-analog (D/A) conversion, producing results identical with those of a comparably configured audio CD player. The rear apron contains conventional analog audio outputs for the left and right channels, plus optical

and coaxial digital outputs. Two sets of video outputs are provided for direct connection to a TV set or monitor. One carries a standard composite video signal, and the other (via a DIN connector) supplies separate luminance and chrominance signals to S-type inputs. Philips has incorporated a comb filter in the CDV488 that is claimed to deliver substantially better picture quality than the comb filters used in most monitors to process a composite signal. In any case, having both types of signal available from the CDV488 gives a user the opportunity to decide which is better.

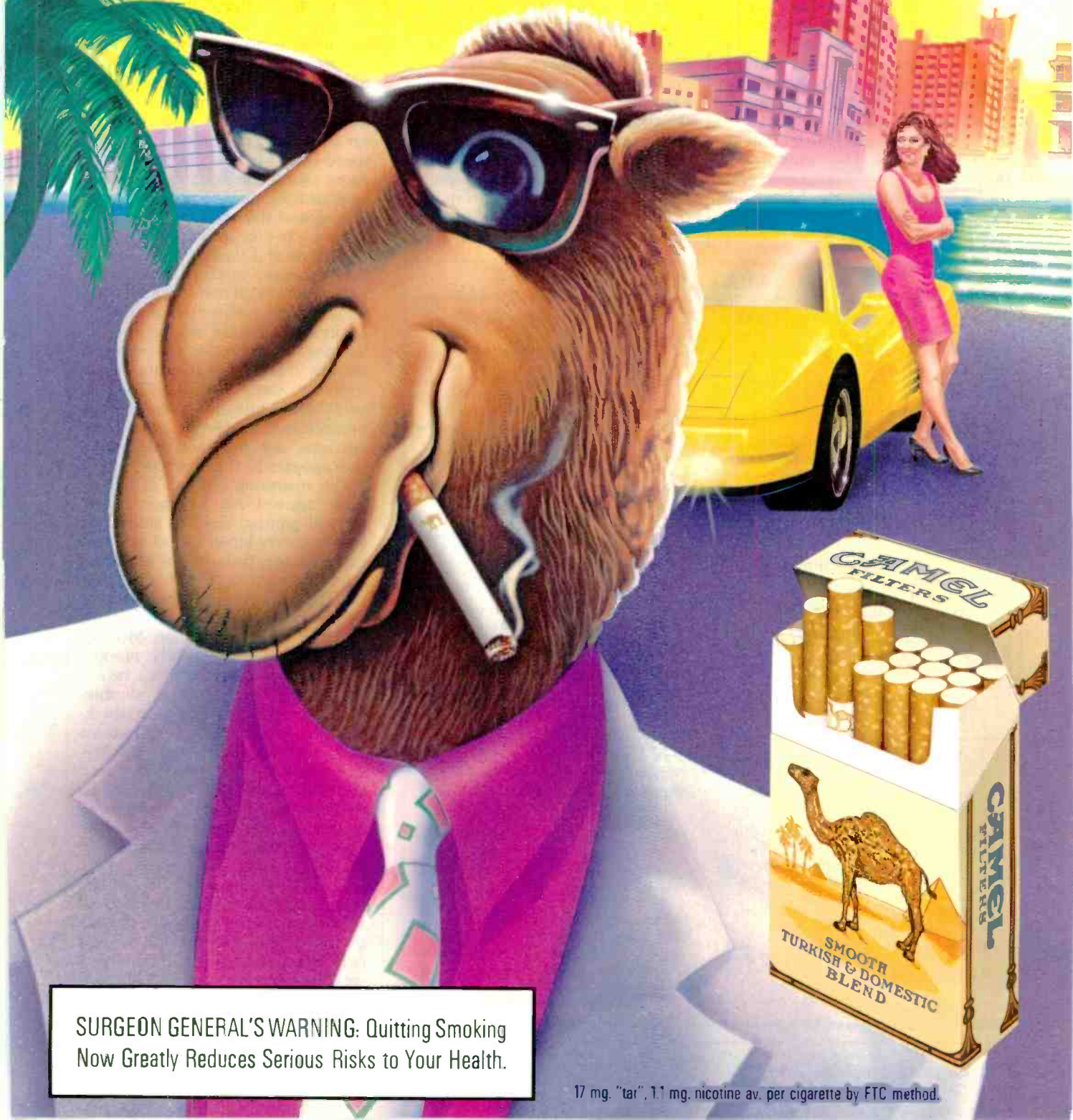
For use with standard TV receivers, the CDV488 also provides its output on a modulated RF carrier (Channel 3 or 4, as selected by the user) and has an F-type coaxial input connector for the TV antenna, which is automatically connected to the receiver when the player is off.

The Philips CDV488 is a large, heavy unit whose dimensions were dictated by the need to accept a 12-inch videodisc. It measures 16½

inches wide, 16¾ inches deep, and 4½ inches high, and it weighs almost 26½ pounds. The disc drawer, which is 12¼ inches wide, extends 10⅜ inches in front of the panel when opened. The inside of the drawer is shaped to accommodate the various disc sizes. Normally, the front panel is almost featureless, containing a pushbutton power switch, two rocker switches to open or close the disc drawer and to select the play or pause mode, and a display window. The window shows the type of disc in use (CD or CD-V), the operating mode, the current track (or chapter, for a videodisc) and index numbers, and the elapsed time on the track and on the disc. The large track and time numerals can be switched to show either the total time and number of tracks or the remaining time and tracks.

Other display indications include the status of the repeat and random-play modes and whether a programmed track sequence has been selected. When the CDV488 is playing a videodisc, the display shows whether the sound was recorded in analog or digital form, whether the CX noise reduction is operating, and whether the audio program is in stereo or "dual mono" (used for certain bilingual recordings). Across the bottom of the window is a row of small numbers corresponding ei-

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ther to the tracks on the disc or to the programmed tracks (up to twenty). As each track is played, its number disappears from the display.

The lower portion of the panel swings down to reveal additional control buttons. Four buttons at the lower right control fast scanning and track skipping in either direction, and another button operates the Favorite Track Selection (FTS) system, a feature of many Philips CD players. Other buttons initiate random play for CD's and control the on-screen display, which presents the same basic information as the CDV488's display window on the screen of a TV receiver or monitor used with it. To the left of the panel are numbered buttons for direct track access and programming

as well as a headphone jack with its own volume control.

The CDV488 comes with a system remote control (RC488CDV) that is perhaps the most comprehensive of its type we have seen. It is considerably more complicated to use than the player's panel controls, although it also *does* much more. Apparently designed primarily to operate a complete A/V system of Philips components, it is also a "universal" control as most of its keys can be programmed to mimic the commands of many single-component remote controls from other manufacturers. The remote unit is one of the largest and heaviest we have encountered, measuring 10 $\frac{1}{4}$ inches wide, 5 inches deep, and slightly over 1 inch thick and weigh-

ing 1 $\frac{1}{2}$ pounds. Its sixty-one buttons, while not the largest number we have counted on a remote control, rank it among the top contenders for that honor.

In addition to its buttons, which are varied in size and shape and grouped, for the most part, according to their control functions, the RC488CDV has a "shuttle" knob mounted concentric with a ring having a spring-loaded center position. The ring can increase or decrease the playing speed of videodiscs or CD-V's by as much as a factor of ten, and it varies the fast-scan speed of CD's in a similar fashion. In pause mode, the knob can advance or retard the playing point on a CD in 1-second steps or step the picture from a CD-V or videodisc through one frame at a time.

The remote control also has an LCD window that shows which component it is set to operate at any given time. These are selected by ten buttons, marked CDV, SAT(ellite receiver), CABLE, PIP (picture-in-picture), TV, AMP, TAPE, TUNER, VCR1, and VCR2. While the control is being programmed to operate other components, the programming menu also appears in this window.

The operating buttons of the remote control are in four clearly defined groups. The ten source selectors (fairly large, round buttons) are at the top, between the knob and the display. At the lower left, below the display, are twenty-five buttons, most of which are numbered for selecting tracks on a disc. Most of the others are cryptically marked (for instance, CH+/OSD), but two of them bear the familiar double-arrow mark signifying the track-skipping function. The five buttons across the top, closest to the display, are marked from M1 to M5. Since their functions vary with the selected component, they are identified by letters in the display (such as FTS, RPT, etc.) that change according to the selected source.

A center group of buttons, of different sizes, is mostly devoted to videodisc control, although it also performs the fast-scan, play, and stop functions for CD's. Finally, a smaller group at the right of the control includes a rocker control for volume, a mute button, four bal-

FEATURES

- Plays CD's, CD-3's, CDV's, and 8- and 12-inch videodiscs
- Four-times-oversampling digital filter (176.4 kHz)
- Dual 16-bit D/A converters
- Programmable to play up to twenty tracks in any order
- Random-play mode
- Favorite Track Selection (FTS) to store user programs for up to 218 discs
- Repeat of track, disc, or selected segment
- Direct keypad access to any numbered track or videodisc chapter
- Track skipping in either direction
- Fast scan in either direction with speed adjustable on remote control
- Video playback speed adjustable up or down from remote control
- Analog and digital (coaxial and optical) audio outputs
- RF output on Channel 3 or 4 to TV receiver
- F-type input jack for 75-ohm VHF TV antenna
- Composite video output to monitor
- S-video output (separate luminance and chrominance signals)
- Front-panel display, LCD window on remote control, and facilities for on-screen status display
- Advanced comb filter for superior S-video picture quality
- Headphone jack with volume control
- Supplied remote control for all front-panel functions, plus index-skipping and video effects; cueing knob with 1-second resolution
- Remote control able to operate up to ten different Philips components; programmable to mimic other wireless controllers
- Player controllable by other components in system linked by Philips RC-5 remote control

LABORATORY MEASUREMENTS (HIRSCH-HOUCK)

All measurements apply to audio (CD) performance only

Maximum output level: 1.88 volts
Total harmonic distortion at 1,000 Hz: maximum 0.005% at 0 dB; minimum 0.0012% at -70 to -80 dB

Signal-to-noise ratio (A-weighted): 125 dB

Channel separation: 123 dB at 100 Hz, 120 dB at 1,000 Hz, 100 dB at 20,000 Hz

Maximum phase shift (from 5,000 to 20,000 Hz): -1 degree at 20,000 Hz

Frequency response: +0.03, -0.02 dB from 15 to 20,000 Hz

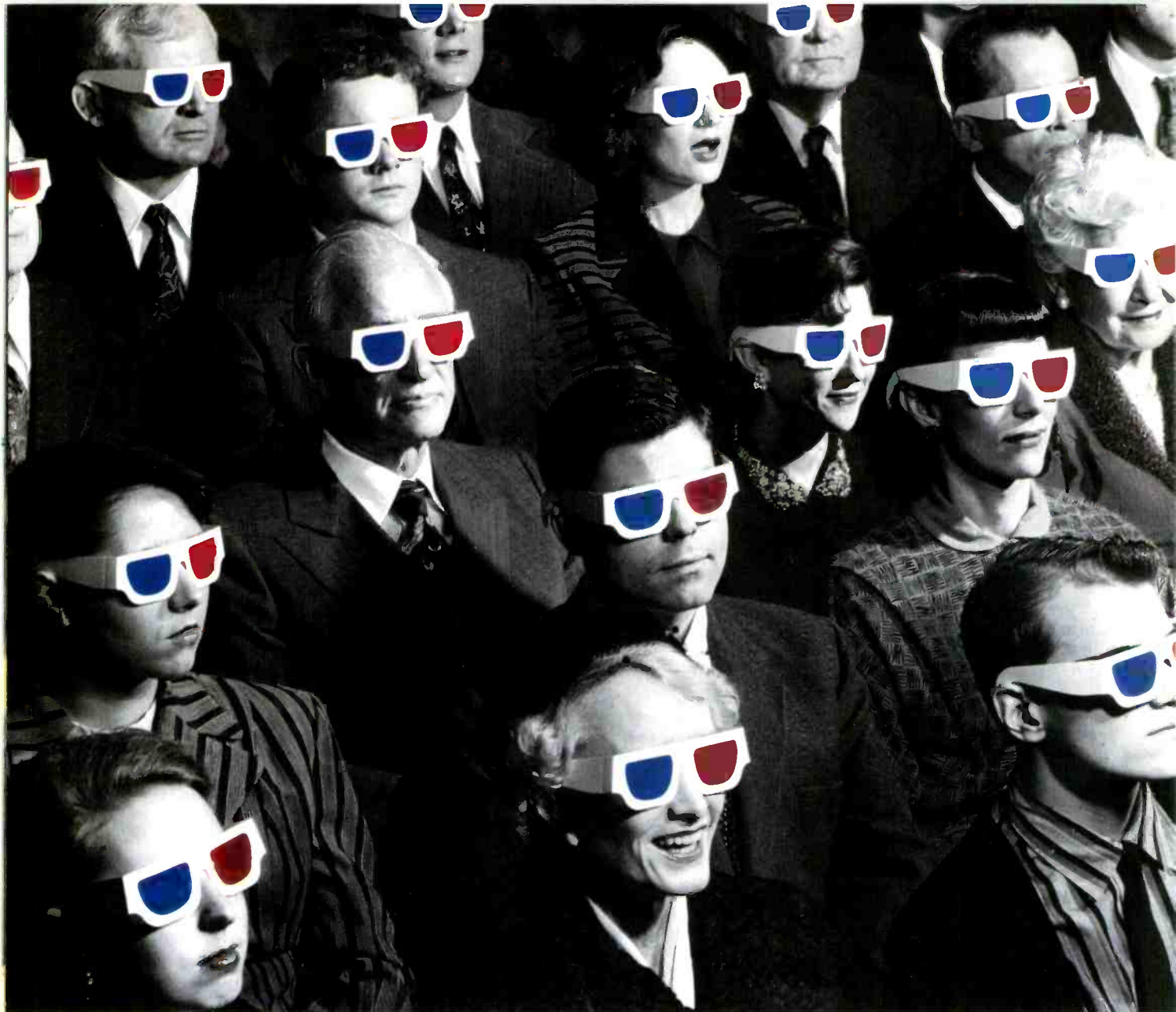
Low-level linearity error: less than 1 dB down to -80 dB; -3.7 dB at -90 dB

Cueing time: 3.7 seconds

Cueing accuracy: A

Impact resistance: top and sides, A

Defect tracking: tracked 900-micrometer defects on Philips TS5A test disc



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Thanks to the virtues of our SA-R477 A/V receiver with Dolby Surround Sound.*

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You won't need a pair of those silly glasses to appreciate this type of 3-D. Just a good pair of ears.



Technics Surround Sound A/V Receiver

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ance buttons (front, rear, and sides) for an amplifier or receiver, and a pause control, which operates with all of the disc formats the player accepts. The red power button presumably operates an amplifier or TV set, and the JOG button activates the shuttle knob and its ring speed control. On the left side of the JOG control is a knurled ring marked CONTRAST, which makes the display readable over a wide range of viewing angles. Price: \$1,300. Philips Consumer Electronics, Dept. SR, One Philips Dr., P.O. Box 14810, Knoxville, TN 37914.

Lab Tests

Hirsch-Houck laboratory measurements were limited to the CD (audio) functions of the CDV488. We did operate it in an A/V system, however, playing a variety of vid-

eodiscs to verify its performance subjectively.

The CDV488 proved to be a first-rate CD player. Its overall frequency-response variation was 0.05 dB from about 15 to 20,000 Hz, with channel levels matched within 0.025 dB. The de-emphasis response error was a maximum of -0.11 dB at 16,000 Hz. The output from a 0-dB test signal was 1.88 volts. The channel separation was 100 dB at 20,000 Hz, about 120 dB at 1,000 Hz, and 120 to 125 dB at 100 Hz. Inter-channel phase shift was a maximum of -1 degree at 20,000 Hz. The dynamic range (EIAJ) was 99.5 dB, and quantization noise was -95.5 dB. The frequency (speed) error was -0.0004 percent.

The D/A converter's linearity error was less than -1 dB at -70 and -80 dB, increasing to -3.7 dB at

-90 dB. Internal noise was very low, reading between -120 and -130 dB from 30 to 20,000 Hz. Power-line hum was less than -115 dB (typically -120 dB) at frequencies from 60 to 240 Hz. Total harmonic distortion (THD) plus noise at a 0-dB level was less than 0.0063 percent from 20 to 12,000 Hz (about 0.0022 percent below 200 Hz) and increased at the highest frequencies—because of D/A conversion artifacts rather than actual signal distortion—to a maximum of 0.17 percent at 20,000 Hz. The 1,000-Hz distortion varied from about 0.0012 percent at -80 dB to 0.005 percent at 0 dB.

The error correction of the CDV488 was good, though not quite equal to that of a few of the best players we have recently tested. It tracked the 900-micrometer error level of the Philips TS5A test disc but had some dropouts at the 1,000-micrometer level of the Pierre Verany #2 test disc. The impact resistance of the player was outstanding, a solid "A" for blows delivered to the top or sides. A very hard blow on top with the fist sometimes caused a momentary dropout, but no loss of position or shutdown.

Although the CDV488's cueing action, like the opening and closing of its disc drawer, seemed slow and ponderous compared with some of the faster CD-only players, the cueing time from Track 1 to Track 15 of the Philips TS4 disc actually measured an acceptable 3.7 seconds. The transition between tracks having no unmodulated interval between them was handled flawlessly. The mechanical noise associated with opening and closing the disc drawer was highly audible—comparable to that from most CD changers during their change cycles.

Comments

Our lab and use tests of the Philips CDV488 left no doubt that it is a superior CD player in terms of performance, if not of convenience. Actually, it was more "different" than inconvenient to use, although its remote control was at times a source of frustration. A complex control system is probably inevitable in a product that must work with (and control) a number of very

VIDEO MEASUREMENTS

Video bandwidth: -2½ dB at 2.0 MHz, -6½ dB at 4.1 MHz

Chroma differential gain: 22%

Chroma differential phase: ±6 degrees

Chroma phase error: +2 to +5 degrees

Videodisc players are reputed to produce crisper pictures with more detail than is possible with a VCR. The video tests performed at Diversified Science Laboratories on the Philips CDV488 bear out that claim. Video frequency response, which relates directly to horizontal resolution, was down only 6½ dB at 4.1 MHz. This figure suggests a horizontal resolution of about 330 lines—essentially all that our NTSC broadcast system is capable of producing.

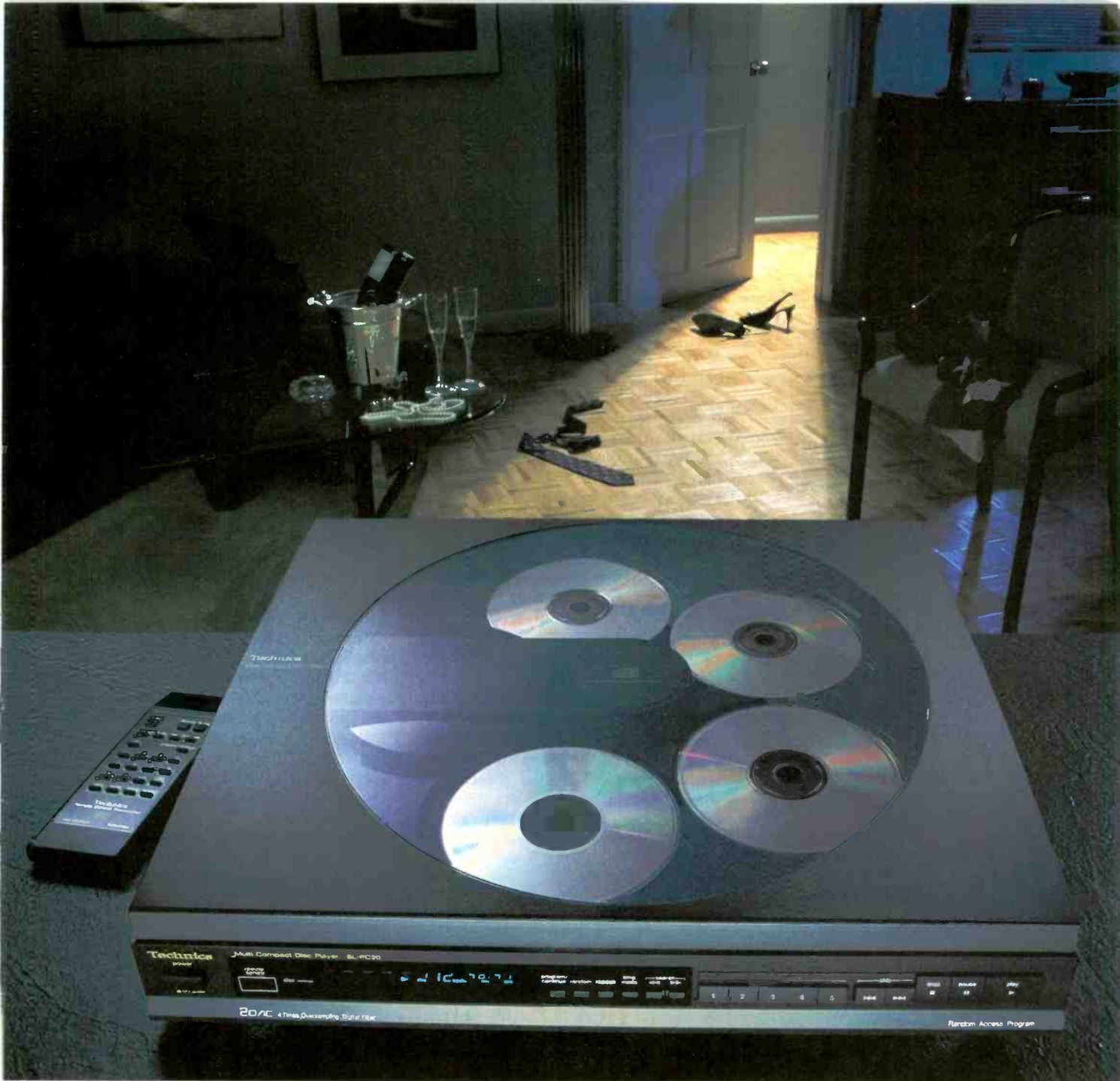
Luminance (brightness) level was close to perfect and as linear as it is possible to determine with standard test discs. This means that on a properly adjusted monitor blacks will be black, whites will be white, and the gray scale between them will be uniformly distributed. Chroma (color) level was low by an average of 3.5 dB. Actually, an error like this is quite common, not only in videodisc players but also in VCR's. Since the discrepancy is well within the correction range of the auto-chroma-level circuitry in monitors and TV

sets, you're not likely to notice any loss in color saturation.

The chroma-differential-gain figure (approximately 22%) suggests the degree to which color saturation varies with scene brightness. The spread measured from the CDV488 was well within normal limits and was uniformly distributed across the brightness range. Color saturation increased with luminance level, the opposite of what typically happens with a VCR's output, and, if anything, this might add some extra punch to the picture.

Chroma differential phase suggests the degree to which color tint changes with scene brightness. The ±6-degree figure we measured from the CDV488 is quite good, and the phase differences were more noise-like in character than luminance-level related. Chroma phase error indicates the accuracy of each tint. Suffice it to say that the Philips CDV488's median error, which is correctable by touching up the monitor's tint control, was so low that we'd doubt anyone would bother to correct it. The "uncorrectable" error was even lower than that. From the video standpoint, the Philips CDV488 is everything one could ask for in a videodisc player.

—Ed Foster,
Diversified Science Laboratories



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- NEBRASKA • Norfolk — Mid City Stereo • North Platte — Monte's Sound Systems • Scottsbluff — Panhandle
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- NEW JERSEY • East Hanover — Tops • Edison — Tops • Secaucus — Tops • Totowa — Sim-O-Rama
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- UTAH • Salt Lake City — Gadgets
- VERMONT • Williston — Consumer's Showcase
- VIRGINIA • Charlottesville — Audio World Limited • Collinsville — Bryant Radio Supply • Roanoke — Lee Hartman & Sons, Inc. • Stafford — ORC Electronics • Virginia Beach — FX • Winchester — Sound City
- WASHINGTON • Bellingham — Video Depot
- WISCONSIN • Janesville — Team Electronics of Janesville • Madison — Phillips • Wausau — Sound World of Wausau
- WYOMING • Casper — Jeff's Electronics

TEST REPORTS

different but equally complex components, but it does set this player apart from practically every single-purpose optical-disc player.

Practically all the information we needed was somewhere in the instruction manual, but it sometimes took a bit of searching to dig it out. Most of our problems were with the controls on the remote unit. Perhaps their placement has some logic that we missed, but it bothered us that the track-skip controls were in the left group, with the track-number buttons, while the play, stop, and fast-scan buttons were in the center section, which is occupied mostly by videodisc controls. This is understandable, perhaps, because controls that might be used for both videodiscs and CD's can be placed logically in the video section. But why is the pause button in the midst of the *amplifier* controls, on the right side of the panel?

The controller was most easily operated when placed on a flat surface, but we had to point it directly at the front of the player to make it work reliably. We also discovered that it should be no higher than the disc drawer, since the open drawer would otherwise block the line of

sight from controller to player, preventing the signal from shutting the drawer or starting play.

As a videodisc player, the CDV488 was excellent. Its picture and sound quality were superb, and we really had no criticisms of its performance or features. All of the features we were able to use worked perfectly. Lacking a monitor with S-video inputs, we could not judge the difference between the Philips comb filter and others.

Although the Philips CDV488 has most of the features we have come to expect in today's dedicated CD players, its cost, size, and relative inconvenience in audio-only operation would make it hard to justify its selection primarily for playing CD's. On the other hand, it is a highly versatile videodisc player, and it can play CD's as well as any CD-only player we know of. Assuming that the Philips remote control can be programmed to control your other components, and that you are willing and able to devote the necessary time to learning how to use it effectively, the CDV488 would be a fine choice for a high-quality audio/video system.

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phragm tweeter and midrange driver cones provide incredible accuracy. And the composite mica/pulp woofer not only delivers a deep, rich bass but helps eliminate the distortion that can accompany it.

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prove low frequency reproduction and total efficiency.

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We don't think you've ever heard rock sound like this before.

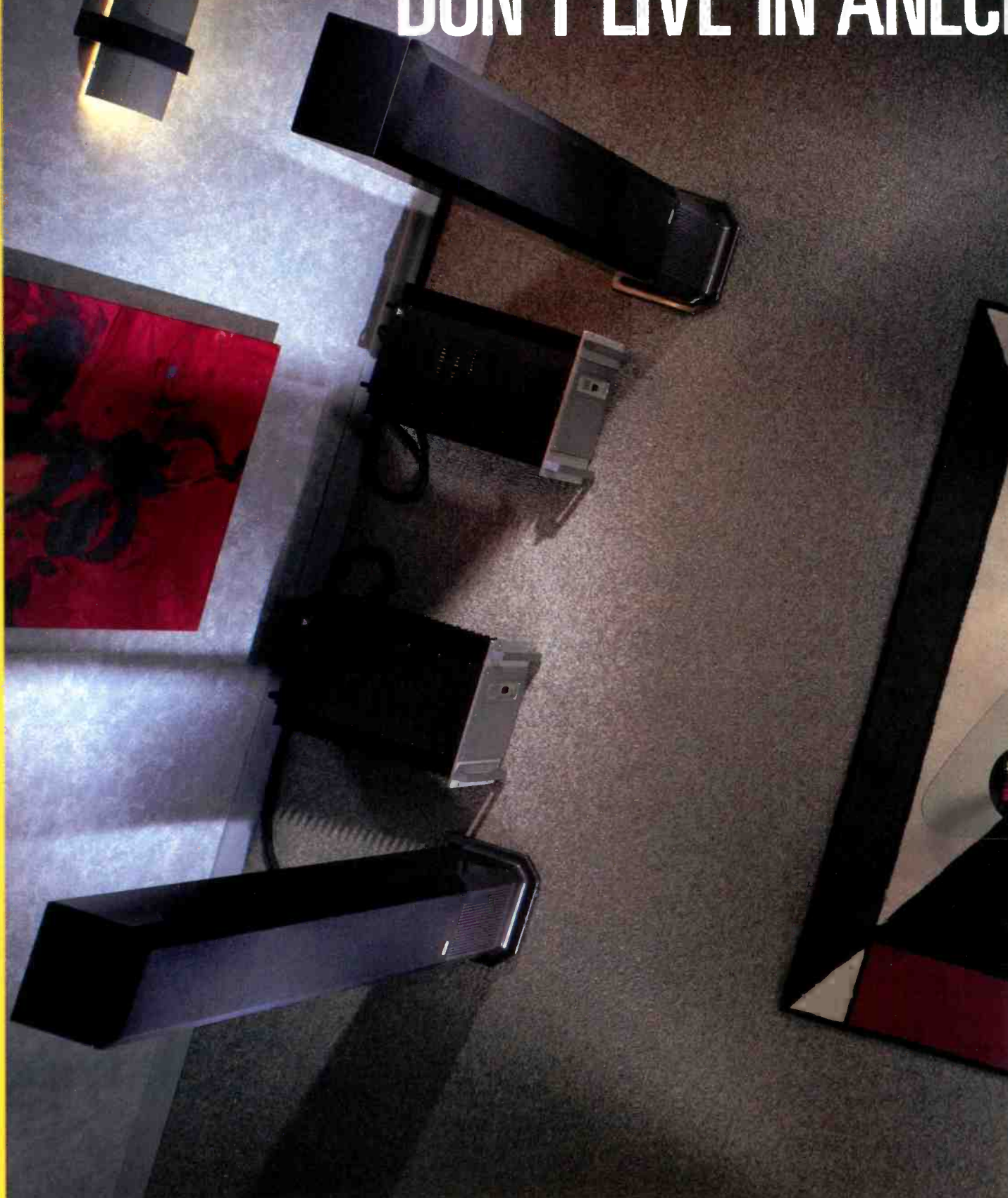


Technics Mica CX Series

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The logo for Energy Audio Products International Corp. features the word "ENERGY" in a bold, stylized, sans-serif font. The letters are white with a black outline, set against a dark background. The letter "Y" has a distinctive shape with a triangular cutout at the top. To the right of the word is a registered trademark symbol (®).

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EPICURE MODEL 1 SPEAKER SYSTEM

Julian Hirsch, Hirsch-Houck Laboratories

THE top speaker in the Epicure Products line is the Model 1, a four-way floor-standing system whose bass and midrange response is controlled by an active equalizer to compensate for the interaction between the speaker and the room boundaries.

The Model 1 is a columnar speaker whose lower portion, slightly more than half of its total height, is devoted to its two 8-inch woofers. These drivers could be more accurately described as a woofer and a "midwoofer." The lower one operates in a vented enclosure and crosses over to the upper one at 160 Hz. The port opens on the bottom of

the cabinet, which is supported on a molded plastic base with louvered slot openings on all sides.

The cross section of the bass cabinet is trapezoidal, 9¼ inches wide at the front and about 12 inches wide at the rear. The rear edges are smoothly rounded, and the cabinet is finished on all visible surfaces with oil-stained walnut veneer. A separate, smaller trapezoidal column fastened to the top of the bass section contains a pair of 4-inch cone midrange drivers, in a sealed enclosure, that operate from 400 to 2,500 Hz, and a 1-inch polycarbonate-dome tweeter. The tweeter is surrounded by a soft foam cushion

that positions the dome and provides damping. Ferrofluid is also used to damp and cool the tweeter's voice coil. The cones of the midrange and low-frequency drivers are made of mineral-filled polypropylene, stamped with a waffle pattern to stiffen them and reduce high-frequency breakup modes.

The upper enclosure, finished like the bass section, is 15 inches high, 5 inches wide at the front, and 8⅞ inches wide at the rear. The complete system stands 42¾ inches high and 13 inches deep and weighs about 53 pounds. The Model 1 can be placed directly on the floor as long as the bass vents are not blocked by a high carpet pile; sharp spikes are supplied for installation on carpets and for stabilizing the relatively tall, narrow cabinet.

The supplied active equalizer—Epicure calls it the SPEQ, for Speaker Placement Equalizer—supplements the internal passive crossover network, which has been designed to present an "easy" load to the amplifier. According to Epicure, the speaker's impedance is essentially resistive (about 4 ohms) through the bass range, and its phase angle remains below 45 degrees from 20 to 10,000 Hz.

The SPEQ has two controls, marked BOUNDARY and MIDBASS CONTOUR, each of which provides separate concentric adjustments for the left and right speakers. The Boundary control adjusts the speaker's output below 100 Hz over a ±6-dB range. It is calibrated to indicate the speaker's relationship to the room boundaries. The $\pi/2$ position (fully counterclockwise) provides minimum bass boost and is used with a corner placement, which provides maximum bass output from the speaker. The middle position (π) provides the correct boost to compensate for placing the speaker along a floor/wall junction, and the maximum boost, at 2π , is meant for a freestanding placement several feet away from any wall.

The Midbass Contour control is intended to correct for a depression in the speakers' frequency response that can occur when the woofers are equidistant from the floor and a wall. Epicure's measurements of the Model 1 in many different rooms

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TEST REPORTS

showed that when the dip occurred it was close to 190 Hz. Therefore, the Midbass Contour control was designed to provide a maximum boost of 6 dB at 190 Hz, giving a user the option of placing the speaker close to a corner or wall without depressing its middle-bass output.

The complete Epicure Model 1 system consists of two speakers and the SPEQ equalizer. Price: \$1,400. Epicure Products, Dept. SR, 25 Hale St., Newburyport, MA 01950.

Lab Tests

All our measurements of the Epicure Model 1 were made through the SPEQ, using the π Boundary setting and no midbass boost.

The two woofer responses crossed over at 160 Hz, as rated, although the output of the upper driver was about 4 dB less than that of the lower driver. The averaged room response was normally irregular, with peak-to-peak variations of about 5 dB across the range from a few hundred Hz to 20,000 Hz. Splicing the room response to the close-miked woofer curve resulted in a composite response variation of ± 5 dB from 35 to 20,000 Hz. Quasi-anechoic FFT response measurements at 1- and 2-meter distances produced generally similar results, except that on the speaker's axis there was a 10-dB dip between 11,000 and 12,000 Hz. This dip also appeared on the room curves, with an amplitude of about 5 dB.

The horizontal dispersion was excellent up to about 13,000 Hz. Despite the apparent response irregularities, the system's phase linearity was very good. Except for a 0.4-millisecond jog at 11,500 Hz (coinciding with the response hole), the group-delay variation was only 0.1 millisecond over the tweeter's operating range and about 2 milliseconds at 180 Hz.

System impedance varied cyclically between 3.9 and 6 ohms from 20 to 1,000 Hz, with an overall phase variation of about ± 20 degrees over that range, and reached a maximum of only 9.5 ohms at 2,000 Hz. It averaged about 4 ohms from 4,000 to 12,000 Hz and rose to 5.5 ohms at 20,000 Hz. The sensitivity was exactly 90 dB sound-pressure level (SPL) at 1 meter with a pink-

noise input of 2.83 volts. Distortion at that input level was between 0.7 and 1 percent from 55 to 400 Hz, rising to 4.5 percent at 40 Hz.

We also measured the SPEQ response separately from the speakers. With the $\pi/2$ Boundary setting the response was flat from 20,000 Hz down to just over 100 Hz, dipping to -2.5 dB at 70 Hz and returning to 0 dB at 40 Hz before falling sharply at lower frequencies. With the π (corner) setting, the response rose to a maximum of 5 dB at 40 Hz before dropping off rapidly, and with the 2π setting the 40-Hz boost was 12 dB, returning to 0 dB at 20 Hz. The Midbass Contour response, independent of the Boundary setting, was respectively $+2.5$ and $+5$ dB at 190 Hz with the $+3$ - and $+6$ -dB control settings.

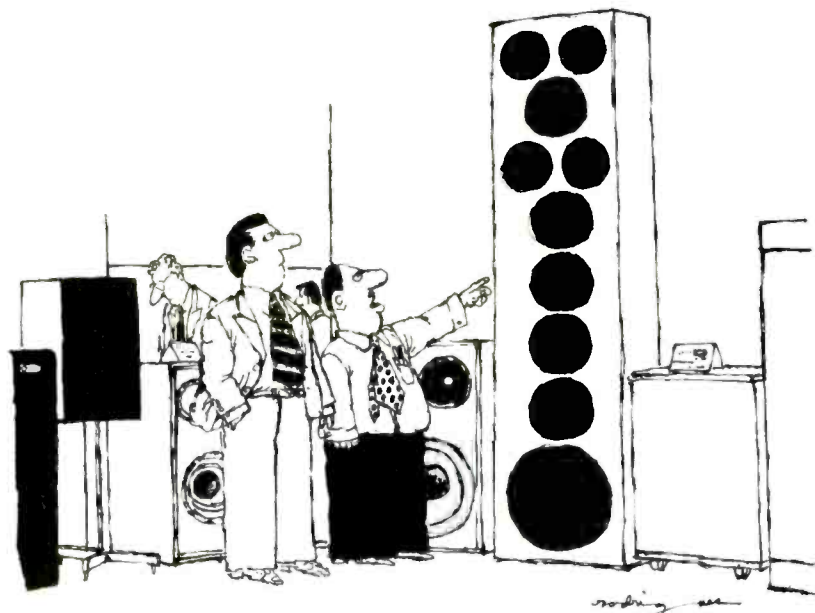
In pulse power tests, driving the speaker at 100, 1,000, and 10,000 Hz, our amplifier clipped before the acoustic output of the speaker became audibly or visibly distorted. That result is not too unusual, except that the average power the speaker was absorbing during each cycle was 1,480, 1,150, and 1,480 watts, respectively, into impedances ranging from 3.9 to 5.5 ohms. At 100 Hz, we heard the sound of clipping, but it was our amplifier that had reached its limit.

Comments

The sound of the Epicure Model 1 was clean, balanced, and well dispersed, with the spacious quality associated with many large speaker systems. Its four drivers blended perfectly, giving no audible clues to their multiplicity. The Boundary control had virtually no audible effect on most program material, yet it was capable of producing an unmistakable feeling of bottom-end power when it was turned up. When we played music with a considerable low-bass content, it made an effective "low-low bass" control.

The Model 1 is a moderately sensitive speaker and does not require inordinate amounts of power to develop a healthy output. On the other hand, it *can* absorb enormous power inputs without distress or damage, so a user can play music as loudly or softly as he wants to. Its price is not out of line with its features and performance, and its appearance is "different" yet attractive. The several smaller (and less expensive) models in the new Epicure lineup are generally similar in styling, design, and driver construction, presenting a range of options for those who like the approach represented by the flagship Model 1.

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Henry Kloss, creator of the dominant speaker models of the '50s (Acoustic Research), '60s (KLH), and '70s (Advent), brings you Ensemble, a genuinely new kind of speaker system for the '90s, available factory direct from Cambridge SoundWorks.

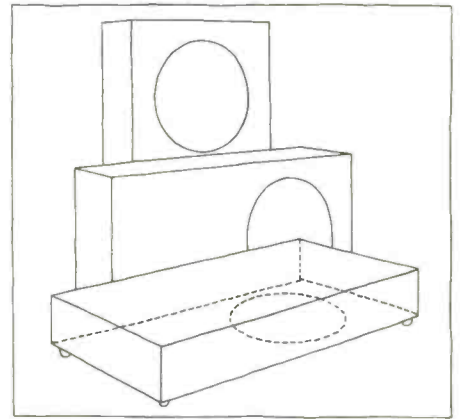
The best sound comes in four small packages.

Ensemble consists of four speaker units. Two compact low-frequency speakers reproduce the deep bass, while two small satellite units reproduce the rest of the music. Separating the low bass on both channels from the rest of the range makes it possible to reproduce just the right energy in each part of the musical spectrum without tuning your listening room into a stereo showroom. With clumsy conventional systems, you can either strive for that balance by letting loudspeakers dominate your room, or sacrifice it for less conspicuous speaker placement.

Your listening room works with Ensemble, not against it.

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Unlike satellite systems which use a single large subwoofer, Ensemble features separate compact bass units for each stereo channel. They fit more gracefully into your living environment, and help minimize the effects of the listening room's standing waves.



Because low frequencies are non-directional, Ensemble's bass units can be installed horizontally, vertically, facing upwards, or facing downwards.

range, depending upon where the speaker is placed in the room. If you put a conventional speaker where the room can help the low bass, it may hinder the upper ranges, or vice-versa.

Ensemble, on the other hand, *takes advantage* of your room's acoustics. You put the low-frequency units where they provide the best bass, whether or not that location is good for the high frequencies (and it usually



-And Make It Sound Like Music. A Most Unobtrusive Way, gine Going Wrong With Ensemble”

Julian Hirsch
Stereo Review, Sept. '88

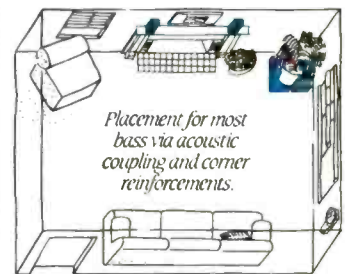
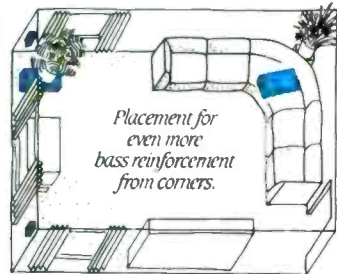
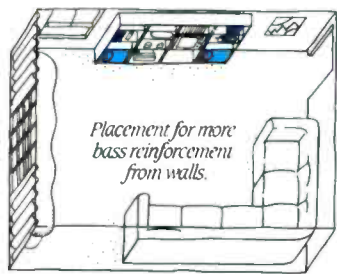
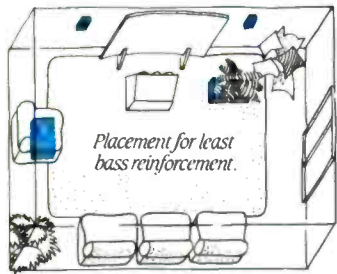
isn't for any speaker). Then you put the satellites where they provide a well-defined stereo "stage."

The ear can't tell where bass sounds come from, which is why Ensemble's bass units can be tucked out of the way—on the

in gunmetal gray Nextel, a suede-like finish highly resistant to scratching. We even gold-plate all connectors to prevent corrosion. But perhaps an even bigger difference between Ensemble and other speakers is how we sell it...

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You can put Ensemble's low-frequency units exactly where they should go for superb bass. You can't do this with conventional speakers because you have to be concerned about the upper frequencies coming from the same enclosures as the low ones.

floor, atop bookshelves, or under furniture. The satellites can be hung directly on the wall, or placed unobtrusively on windowsills or shelves (among other possibilities). The result is extraordinary. There are no bulky speaker boxes to dominate your living space, yet Ensemble reproduces the satisfying deep bass that *no* mini speakers can.

Not all the differences between Ensemble and other speaker systems are as obvious as our two subwoofers.

Unlike three-piece satellite systems that may appear similar, Ensemble's four-piece design doesn't cut any corners. We use premium quality components for maximum power handling, individual crossovers that allow several wiring options and cabinets ruggedly constructed for proper acoustical performance. The low-frequency units use the classic acoustic suspension design, and are finished in black laminate. The satellites are finished

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Every time I came out with a new speaker at AR, KLH, or Advent, my friends would ask me, "Henry, is it worth the extra money for me to trade up?" And every time I would answer, "No, what you've already got is still good enough."

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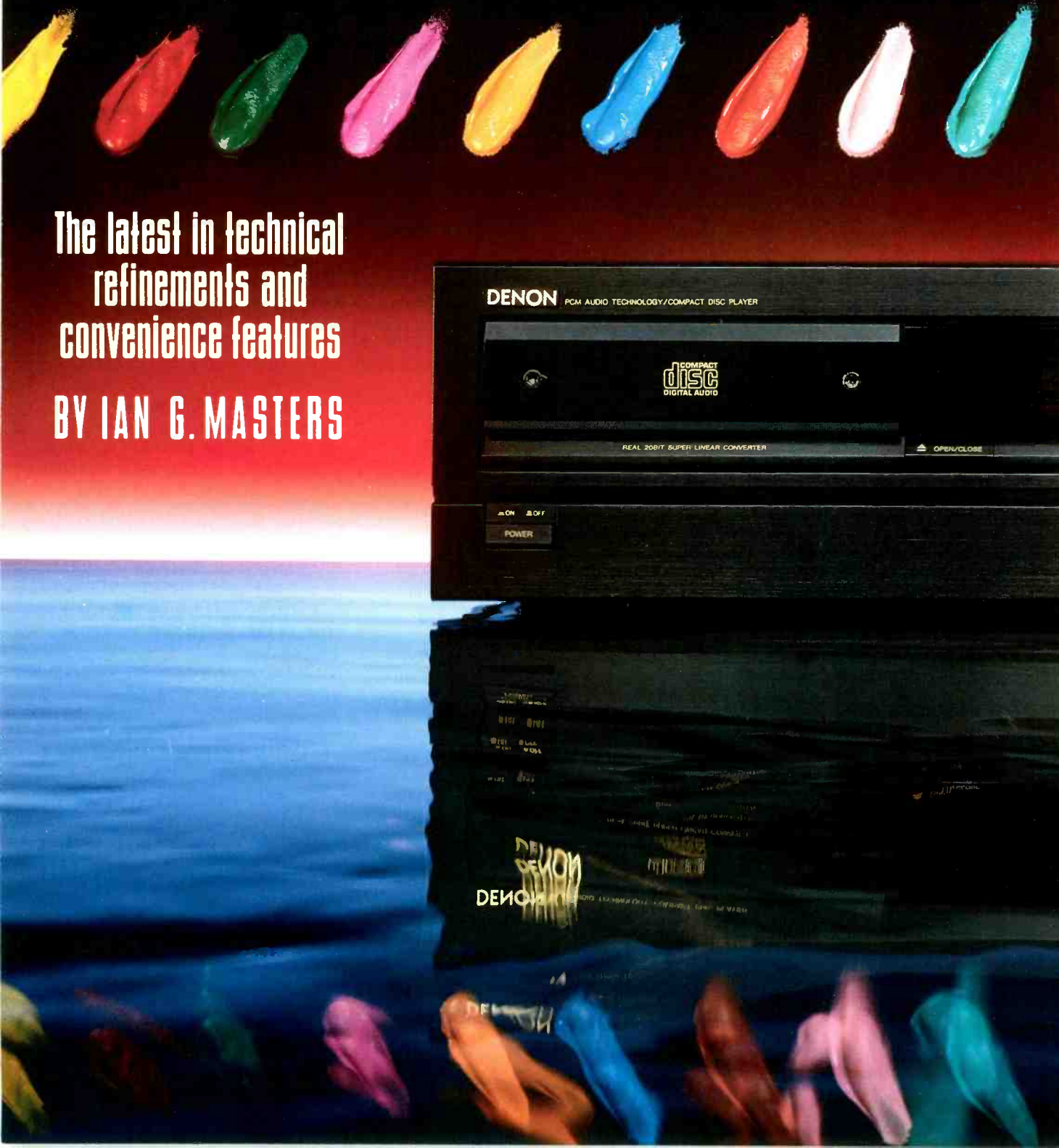
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THE NEW CD PLAYERS

The latest in technical
refinements and
convenience features

BY IAN G. MASTERS



AFTER you've made something "perfect," what do you do for an encore? When it was first introduced, the compact disc system's performance was high enough that most observers expected future player developments to be mostly in the areas of increased flexibility and control, rather than in the basic signal-reading, error-correction, and conversion circuitry. But, as it turns out, CD players have been subject to more design

improvements and refinements in the past few years than practically any other audio component.

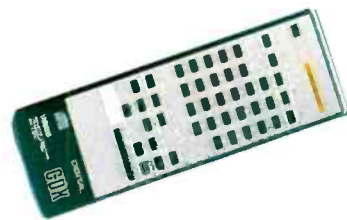
Certainly there have been many innovations that are purely functional, which have enabled CD players to do more things, but designers at the major audio companies have not been shy about tinkering with the machines' innards as well. First came widespread adoption of oversampling digital fil-

ROBERTO IRIGOSAN





The Elite PD-71 (\$850) is one of Pioneer's two top CD players. Its "multifloating suspension system" isolates the pickup mechanism and all electronics from the chassis, eliminating vibrations that can degrade sound quality. It uses true 18-bit digital-to-analog converters with eight-times oversampling and direct-wire connections that were designed to minimize interference.



Yamaha's CDX-920 incorporates eight-times-oversampling digital filters as well as the company's Super Hi-bit digital-to-analog converter technology, which is said to increase digital processing accuracy without adding audible noise. Operating features include Tape Edit, five modes of repeat play, and twenty-four-track programming, and it comes with a remote control that's compatible with Yamaha's RS Series components. Price: \$699 in black or titanium color.



ters to reduce measurable—but probably inaudible—phase shift at high frequencies. Then came various methods of countering internal interference by means of optical coupling, separate power supplies, and the use of external digital-to-analog (D/A) converters. And so on.

Bits, More or Less

The latest round of technological skirmishing has been dubbed "the bit wars," as manufacturers introduce ever more sophisticated conversion techniques. Although information on the compact disc itself is made up of 16-bit digital "words," some of the first players on the market used 14-bit converters, which were easier to manufacture and more readily available. Oversampling digital filters with noise shaping (to minimize noise at audible frequencies) enabled these early machines to approximate 16-bit performance. When more advanced D/A converters became common, most manufacturers switched to them, and now even the most modest machines have at least 16-bit converters as a matter of course.

Theoretically, a 16-bit D/A converter should decode the data on a CD exactly, but this almost never happens: Real converters are imper-

fect and usually cause some distortion of very low-level signals. A converter capable of handling samples larger than 16 bits can come very close to perfection with CD data, however, if its accuracy is very good over its full range. In that case, its nonlinearity will be significant only at signal levels lower than can be encoded on a CD.

The upshot is an increasing use of 18-bit converters. In some cases, manufacturers use techniques like those originally used to enhance the performance of 14-bit chips to simulate 18-bit decoding with a 16-bit converter. More and more, however, true 18-bit converters are being employed, usually with four- or eight-times-oversampling digital filters. Players using 18-bit technology now range from modestly priced models such as the Vector Research VCD-410R (\$270) and Denon's DCD-620 (\$300) to such blockbuster players as the semi-pro Technics SL-P1300 (\$1,599) and Onkyo's Grand Integra DX-G10 (\$2,500).

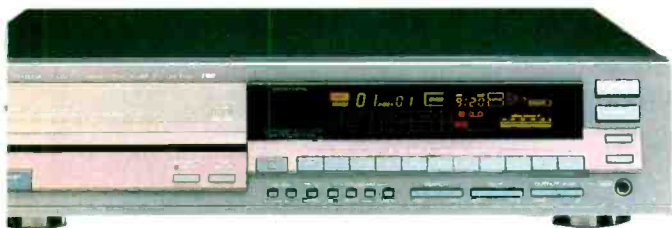
As 18-bit conversion has become common, it has—perhaps inevitably—spurred some companies to increase the odds even further. Denon, among others, employs true 20-bit D/A converters in its top models, and Yamaha includes "Super Hi-bit" technology in its CDX-1120

player. The Yamaha system uses an 18-bit converter but applies what the company calls a "four floating bit approach" to achieve the equivalent of 22-bit performance.

A more radical approach to D/A conversion has been adopted by Technics, Sansui, Harman Kardon, and Philips, although their processes differ in detail. Called generically either "bit stream" or "one-bit" conversion (each manufacturer has its own name), this technique involves a much higher rate of oversampling (256 times in the case of Philips, for example), and uses a converter that processes data coming off the disc one bit at a time (see "Digital Update" on page 95).

Sansui was the first off the block with 1-bit technology, incorporating its Linear Direct Converter System (LDSC) in the CD-X711 player (see test report on page 49). Now the company has used the system in a mid-price player, the CD-X311, which retails for \$499. Harman Kardon calls its version "pulse width modulated bit stream technology," and it's used in the HD-7600 (\$599) and HD-7500 (\$449).

Both companies build their new conversion systems around Matsushita's MASH/1-bit DAC (D/A converter) chip, which was developed from a joint research project with



Technics has converted to carousel-style CD changers and now offers the top-loading SL-PC10 and SL-PC20 and the drawer-loading SL-PC30 shown above. The SL-PC30 (\$330) plays up to five CD's or CD-3's (without an adaptor), and the drawer can be opened to change a disc even while one is playing. It comes with a full-function remote control.



Nippon Telegraph and Telephone. MASH stands for "multistage noise-shaping"; all the 1-bit systems use some form of noise-shaping to shift noise out of the audible band into the ultrasonic range. Matsushita is the parent company of Technics, whose SL-P222 (\$260) and SL-P555 (\$380) players also incorporate the MASH/1-bit DAC chip. Philips uses its own 1-bit chip in the new CD840, which retails for less than \$600. And Sony is using noise-shaping not only in its \$8,000 CDP-R1 but also in several new, less exotic players.

Other Goodies

It's not only the D/A converter that has received attention in the new CD players. While top models from a wide range of manufacturers increasingly use eight-times oversampling, some companies, such as NEC, have upped the ante to sixteen times or even higher and use four separate D/A converters, two for each channel.

One new area of concern is jitter: irregular spacing of the on/off pulses that make up the digital code. To minimize this effect, which might in some cases interfere with decoding, the Kenwood DP 8010 (\$650) uses what the company calls "digital pulse axis control" along

with a phase-locked-loop circuit for frequency accuracy in the D/A converter. The JVC XL-Z1010TN (\$700) incorporates the company's K2 interface circuit to eliminate jitter and other distortions of the pulse train before it reaches the D/A converter. Several new machines from Sony reduce jitter by a method the company calls "digital sync," while Arcam's transport-only Delta 170 (\$1,295), which is intended for use with an external D/A converter, is said to achieve the same thing by the use of separate transformers and power supplies.

Extra power supplies—in this case four of them—are also incorporated in the Mission Cyrus PCM II, which lists for \$999. Some sort of record in this area must be held by California Audio Labs, however, whose Tercet Mk III (\$1,295) contains *twenty-three* separate regulated power supplies, along with a custom low-jitter clock module.

Other refinements to the CD art include the use of Class A amplification circuitry in the analog portion of Adcom's GCD-575 (\$600), which also employs an "analog frequency/phase contour" to improve the sound of badly mastered CD's. Something similar is accomplished by Carver's latest, the TL-3300 (\$700), which includes the Digital

Time Lens originally developed for the company's first CD player. This switchable feature puts a small dip in the lower-treble response to reduce harshness and slightly boosts the amount of L-R (channel-difference) information in the signal to enhance depth and ambience. Luxman uses vacuum tubes in the analog output stages of its \$1,200 D-105u, while Pioneer has improved stability by employing an antiresonant "multifloating suspension" in its PD-71 (\$850).

A number of manufacturers have also provided features to assist users who want to copy their CD's onto cassette. The Technics SL-P999 (\$600), for instance, can search a disc for the maximum level and play the relevant passage over and over to allow proper setting of the recorder. The Sansui CD-X311 (\$500) enables you to select a program time of 23, 27, 30, or 45 minutes, depending on the length of cassette you are using, and then automatically selects and plays a sequence of tracks that will fit. Aiwa's XC-005 (\$550) contains a recording-calibration system that helps you optimize the setup of your cassette deck for recording from compact discs.

The newest type of CD machine is the "combi-player," which will play



Alpine's Model 7909 QRB is a car CD tuner that can also control Alpine's CD Shuttle changer. The in-dash CD player has many of the features of top home models, including dual 18-bit D/A converters, eight-times oversampling, random play, and a CD Straight switch that bypasses preamp circuits. An automatic disc-size sensor adjusts for either 5- or 3-inch CD's. Price: \$1,200.

Denon's DCD-3520 replaces the DCD-3300 as the company's top CD player. It uses Denon's 20-bit Super Linear D/A converters, one for each channel, and an eight-times-oversampling digital filter. It has one optical and two coaxial digital outputs for use with an amplifier that includes a D/A converter. Price: \$1,500.



all laser-read discs, including 8- and 12-inch videodiscs. Combi-players are now being offered with some of the niceties of "straight" players, such as the fiber-optic digital output on Mitsubishi's M-V7010 (\$1,099) and the separate luminance and chrominance (Y/C, or S-video) outputs on the Philips CDV487 (\$949). One unusual machine is the MV-D100 from Sharp (\$1,500), which functions both as a combi-player and as a three-disc carousel compact-disc changer that's able to accept both 5- and 3-inch CD's.

JVC, on the other hand, has released the first commercial player able to handle CD graphics (CD-G). The graphics portion of a CD-G consists of relatively low-resolution still images (photographs of performers, artwork, song lyrics, and so forth) displayed as accompaniment to the music. JVC's XL-G512 (\$500) contains dual 18-bit D/A converters with noise shaping and an S-video output for use with TV monitors that are equipped to handle such signals.

Changers

Increasingly, audiophiles are beginning to appreciate the convenience of CD changers, which can

handle anywhere from five to twelve discs with essentially the same ease and facility as a conventional player can handle a single disc. These come in two basic formats: magazine and carousel. Carousel changers were first introduced by Sony, which now has several models available, such as the new CDP-8ESD (\$550). Sony has been joined in the carousel biz by Technics, which has introduced three new five-disc models ranging in price from \$290 for the SL-PC10 to \$330 for the SL-PC30.

Most changers require the user to load a special magazine with five to ten discs. Perhaps the most capacious of these players is the Hitachi DA-C70 (\$550), which can hold two magazines with six discs each, enabling you either to program from all twelve or to program one set while the other is playing. A forty-one-key remote is included. Almost as flexible is the Yamaha CDC-610U (\$599), which lets you program as many as thirty-six selections from among the ten discs in its single magazine.

Teac's PD-700M (\$499) is a six-disc changer that is CD-3 compatible and allows programming of as many as thirty-two selections. Na-

kamichi's CDC-4A six-disc magazine changer (\$1,195) can memorize a sequence of as many as fifty tracks and has facilities for synchronized recording with certain of the company's cassette decks. In the memory department, however, the Onkyo DX-C500 (\$530) is probably the champ, as it will hold programming for up to 340 discs. Fisher's DAC-Z1 (\$900) is restricted to five discs, but it features an 18-bit D/A converter, eight-times oversampling, and fiber-optic coupling.

Portable CD

More and more, people want to take their CD's with them, and numerous players let them do just that, either as headphone portables or as all-in-one boomboxes. In many cases, owners of portables use them at home as much as outside, so many manufacturers design in features to make home use easier. Kenwood's DPC-80 (\$449), for instance, comes with a full wireless remote and a digital output. The Sony D555 (\$450) features not only eight-times oversampling and dual D/A converters but also a digital signal-processing circuit that provides such functions as compression and five-band equalization. For those



The Conrad-Johnson DF1 is a CD player that doubles as a preamplifier. It has a level control, auxiliary and tape inputs, and a tape output, but no phono stage. The CD portion uses a quadruple-oversampling digital filter and 16-bit noise-shaping D/A converters. It comes with a remote control and a two-year limited warranty. Price: \$1,595.

Onkyo's DX-5500 CD player (\$600) uses "Opto-Drive" technology, in which LED phototransistor arrays convert light energy into a highly stable current source. This is said to reduce power-supply variations in critical circuits and eliminate electromagnetic interference. The player also uses a four-times-oversampling digital filter and linear 18-bit D/A converters.



interested primarily in listening on the go, however, the Technics SL-XP2 (\$220), at a mere 13.8 ounces, lightens the load.

Somewhere between a portable and a full-blown audio system is the Fisher PHD-850 (\$700), which has detachable speakers, a nineteen-function remote, and dual cassette transports in addition to a CD section. It accepts 3-inch CD's without an adaptor, as do the Goldstar PCD-N7 (\$250) and several others. The Goldstar and Sharp's GX-CD10 (\$400) also provide direct CD outputs for connection to home systems. And for eye appeal, there's the Citizen CBM-5000LT (\$350), which looks much like a high-tech briefcase but contains a CD player, a cassette deck, a tuner, and an amplifier. It has both external-speaker and line-level CD outputs.

CD in the Car

The ultimate in away-from-home CD equipment is the autosound player, and these abound. The technological advances that have been applied to home players are starting to show up in car units as well. Alpine's Model 7909 car CD tuner (\$1,200), for instance, uses an 18-bit D/A converter and eight-times over-

sampling. It also represents a fairly new sort of autosound component: a CD "controller" head unit that can operate a trunk-mounted CD changer besides playing single discs, or even cassettes, itself.

More typical, perhaps, is Yamaha's YCR-705, which is a conventional cassette receiver but can also operate the company's trunk-mounted magazine changer. Similar in format is Denon's DCR-7870 cassette receiver, which can be paired with the DCC-1570 ten-disc changer (\$750). Concord's twelve-disc CD1 changer (\$1,000) has a controller/display for the dash and a remote control for the passenger area. Clarion's six-disc Audia 6100 changer (\$770) can be run by its Audia 6110 controller (\$200), which is half-size to facilitate use with other components. JVC's XLMK1200J (\$730) uses a pair of six-disc magazines and can be operated either from the KSC1200J cassette tuner (\$599) or the KSRM12J stand-alone controller (\$249).

Nakamichi calls its DAC-101 controller (\$495) a "car outboard D/A converter." It operates a ten-disc changer and uses four D/A converters and eight-times oversampling. It can also be used to control

a digital audio tape player. Among conventional car CD players, the growing popularity of the 3-inch CD is reflected in several machines that can take the diminutive discs without an adaptor. Sony's CDX-R77, (\$650) and Kenwood's KDC-92R (\$649) are both CD tuners with this capability.

Clarion's Model 5630 (\$850) is the company's first CD receiver that can take a CD directly, without using a protective loading cartridge. It also includes anti-theft features and 40 watts of power. The JVC XL-C4000 (\$749) is a two-chassis CD receiver that contains its own four-channel amplifier. Blaupunkt's CDP-01 player (\$550) also supports four channels, but in this case four preamp outputs are provided.

Perhaps the biggest surprise, seven years after the introduction of the compact disc, is that the pace of innovation in the format has not slackened in the least. If the last year is any guide, it is actually picking up steam. Given the nature of so many of these developments, it seems pointless to predict anything about future generations of CD players except that the quest for perfection will continue. □



SONY TA-E1000ESD DIGITAL PREAMPLIFIER

The first digital signal
processing control amplifier



WITH the major exception of digital signal processors, most so-called "digital" audio components have relied on conventional analog circuits. The first significant change in that pattern to reach us is Sony's TA-E1000ESD Digital Processing Control Amplifier. As its name implies, the TA-E1000ESD is a preamplifier, or control center, that contains digital signal-processing (DSP) circuits. Yet it goes so far beyond that simple pairing as to define a new category of audio product—one that will certainly become the norm in the relatively near future.

Virtually everything that is done to a signal within the TA-E1000ESD takes place in the digital domain. Since almost all current audio sources are in analog form, the selected analog input is first converted to digital form by a 16-bit analog-to-digital (A/D) converter. From that point until it is ready to be supplied to an external power amplifier, the signal remains a series of digital "words." For use with components having digital signal outputs, such as some CD players, the TA-E1000ESD has coaxial and optical digital inputs. There is also a separate optical digital input/output pair for use with a DAT recorder.

Most of the special capabilities of the TA-E1000ESD are made possible by two

Sony LSI's (large-scale integrated circuits). For more about how these chips do their jobs, see the box on page 93.

Externally, the TA-E1000ESD resembles a typical high-quality audio/video preamplifier. It has a large volume knob, with an illuminated index marker, and a row of narrow input-selector buttons. Their labels hint at the versatility of this component. The inputs include one digital source, phono, tuner, CD, two tape decks, a TV receiver, a videodisc player, and five additional video sources, one of them with front-panel connections for temporary hook-ups. A MIX button allows separate selection of audio and video input signals for output to a video monitor and audio system.

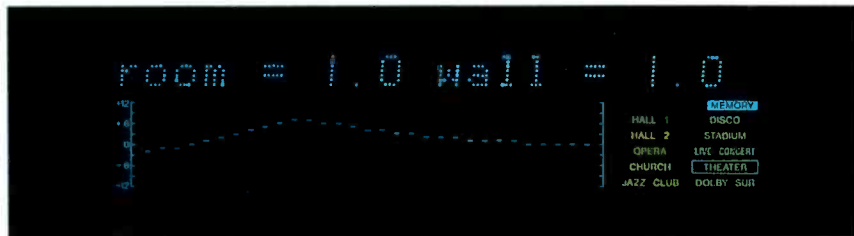
The large display window and several related controls also distinguish the TA-E1000ESD from most conventional preamplifiers. Normally, the window shows only the selected source, a large frequency-response graph for the three-band parametric equalizer, and the names of the ten surround-sound programs that are stored in the unit's digital memory. Small buttons above the window, marked PARAMETRIC EQ, DYNAMICS (an adjustable compression or expansion of the program dynamics), and SURROUND, turn the indicated functions on and off. Small lights indicate

BY JULIAN HIRSCH

which function is in use and show the sampling rate (32, 44, or 48 kHz) of a digital input source.

Options

The SURROUND MODE buttons to the right of the SURROUND switch select either factory-preset or user-programmable modes, with ten available choices in each category: HALL 1, HALL 2, OPERA, CHURCH, JAZZ CLUB, DISCO, STADIUM, LIVE CONCERT, THEATER, and DOLBY SURROUND. Pressing the PRESET/USER button allows you to change any or all parameters associated with a particular surround program and store the final adjustments for later recall.



The buttons and knobs to the right of the window control virtually all of the special features of the TA-E1000ESD. The MAIN PARAMETER button steps sequentially through room size, rear-to-front seat position, center-channel level, EQ level, wall absorption, left-to-right seat position, rear-channel level, and EQ frequency. The current setting of the selected parameter is displayed in the window.

The SUB PARAMETERS control performs a similar function for other adjustable features, including the volume level in each rear channel (0 to -6 dB in 1-dB steps), effect level (0 to 100 percent in 1-percent steps), early-reflection time (1 to 255 milliseconds), early-reflection level (0 to 100 percent), reverberation time (0.1 to 5.0 seconds in steps of 0.1 second), spread (0.5 to 2.0 units in

steps of 0.1), reverberation density (low, mid, and high), and dynamics (nine expansion and nine compression settings, plus a linear setting). The actual adjustment of each selected parameter is done with one of the two DIGITAL PROCESSING CONTROL knobs, which are rotated to send impulses to the digital circuits that make the necessary changes.

The EQ BAND and EQ SLOPE controls select and adjust the three parametric-equalizer bands. Each band can be centered by one of the knobs at any of ninety-two discrete frequencies, from 18 to 20,000 Hz. The other knob adjusts the relative gain at the selected frequency by up to ± 12 dB in steps of 0.1 dB. The EQ SLOPE control varies the width, or "Q," of each band in four steps

from 0.7 (the widest) to 20 (the narrowest).

Other front-panel controls on the TA-E1000ESD include the power button, muting switch, and display dimmer. The headphone jack is also visible. But there are many more controls behind a hinged section of the panel. When the full-width door swings down, it reveals twelve buttons, four small knobs, and input and output jacks for the VIDEO 5 source, including an S-video DIN socket. The concealed control functions include analog and digital input-level adjustment, Dolby Surround calibration, storage of control settings and program names, application of digital effects to the recording outputs, left-right channel balance, and display blanking.

On the rear apron of the TA-E1000ESD are phono jacks for all

the inputs and outputs except the front-panel VIDEO 5 source. S-video DIN sockets are provided for VIDEO 1 and VIDEO 2 as well as one video-monitor output. There are also optical connectors for digital sources and special connectors for other Sony components in a unified system. In addition to two pairs of front-channel outputs, there are line-level outputs for center and rear channels and two video-monitor outputs. Two of the four AC outlets are switched, and they have an unusually high rating of 700 watts.

The TA-E1000ESD is furnished with an infrared remote control that duplicates almost all of its front-panel controls. About two-thirds of its eighty-four controls are for the preamplifier. The rest are designed to operate Sony video components but can also mimic the commands of remote controls for other products. The Sony TA-E1000ESD, including its wood side panels, measures 18 $\frac{3}{8}$ inches wide, 13 inches deep, and 5 $\frac{3}{4}$ inches high. It weighs 17 $\frac{1}{2}$ pounds. Price: \$1,000. Sony, Dept. SR, Sony Dr., Park Ridge, NJ 07656.

On the Test Bench

Since our test sample of the Sony TA-E1000ESD was a prototype, it lacked a final instruction manual, but we had a draft translation of the preliminary manual and excellent technical support from Sony representatives. After considerable experimentation we were able to use most of its features without undue difficulty.

The sheer number of controllable parameters made it impossible to verify all of them, or even a large percentage. Well over 1,200 different settings of individual controls are available, and the possible combinations of settings runs into the millions. Therefore, we limited our measurements of the TA-E1000ESD to those that would apply to any conventional preamplifier, relying on actual use of its other features to judge their effectiveness. Most tests were made from the analog (CD) inputs to the analog line outputs.

The high-level frequency response of the TA-E1000ESD was flat within ± 0.02 dB from 20 to 2,000 Hz, falling to -0.2 dB at

10,000 Hz and -1.5 dB at 20,000 Hz. The response cut off sharply above 23,000 Hz because of the anti-aliasing filter. RIAA phono-equalization error was ± 0.2 dB from 60 to 20,000 Hz and -1.4 dB at 20 Hz. The parametric-equalizer curves were as close to their rated frequencies, amplitudes, and bandwidths as we could measure, with the perfect symmetry that one sees in textbooks but rarely in a consumer product.

It is difficult to define the input sensitivity, noise level, and distortion level of the TA-E1000ESD because, unlike most conventional preamplifiers, it does not have a single-valued gain setting. Controls behind the hinged door are used to set the input level so that it will not overload the A/D converters (when it does, a red light flashes and harsh distortion is heard). This approximate input-level adjustment can have a considerable effect on the setting of the main volume control for a given output level. Typical sensitivities (for a 0.5-volt output) were about 75 millivolts (mV) for the CD input and about 1 mV for phono.

The A-weighted output noise, referred to a 0.5-volt output, was -101.5 dB for the CD input and -81.4 dB for the phono input. The maximum output at clipping was about 3.2 volts, depending somewhat on the various control settings. The 1,000-Hz total harmonic distortion, excluding noise, at the rated 1.5 volts output was 0.018 percent, consisting mostly of odd harmonics from the third to the seventeenth, each at a level of about -85 dB. With noise included, the distortion reached its minimum just below the clipping level, where it measured 0.045 percent.

THE channel separation through the CD or phono inputs was 57 dB up to about 300 Hz, narrowing to about 38 dB at 10,000 Hz and 34 dB at 20,000 Hz. Crosstalk from the CD to the phono input was a constant -70 dB from 20 to 20,000 Hz. The phono preamplifier overloaded at a very low 32 to 37 mV from 20 to 20,000 Hz when measured at the line outputs. Measured at the tape-recording outputs, however, the overload readings were in the 86- to 90-mV range. The phono-input impedance was 50,000 ohms in parallel with an 85-pF capacitance.

Digital Signal Processing

ONE look at the front panel should convince you that the Sony TA-E1000ESD isn't an ordinary preamplifier. In fact, the TA-E1000ESD is much closer to a digital computer than to any analog preamplifier we have ever seen.

Its secret is digital signal processing, or DSP for short. Only recently has the advent of powerful, fast, and economical integrated circuits made DSP a reality for consumer audio. With these new chips, the digital audio processing introduced by the compact disc will increasingly extend through the audio chain. Because DSP technology has so many more applications than D/A or A/D conversion, however, it will eventually have a more profound effect on audio than the CD player.

The TA-1000ESD's High Density Linear Pulse A/D converter uses a 1-bit technique. This type of converter design banishes brick-wall analog filters—long since superseded in D/A converters by oversampling. Its linearity is specified as within 0.1 dB down to -90 dB, an unprecedented accomplishment for an A/D converter. And the other A/D specifications are equally impressive: 0.0015 percent THD, 0.0001-degree phase error, and 105-dB channel separation.

Digital-to-analog conversion is improved as well. The front channels use two 18-bit D/A converters with eight-times oversampling and noise shaping, while the rear channel uses a 16-bit converter with four-times oversampling. Any of the three standard sampling rates—32, 44.1, or 48 kHz—can be used.

Sandwiched between the input and output converter stages is the heart of the TA-E1000ESD, its DSP circuitry. Once the analog audio signal from an LP, cassette, or tuner is converted into digital data (digital inputs from CD players or DAT decks bypass the A/D section), the preamplifier is able to perform its operations using DSP computation.

The digital signal processing is done by pairs of CXD-1160 and CXD-1355Q integrated circuits, both proprietary Sony chips. They handle their Herculean number-crunching chores with some of the most sophisticated DSP circuitry around. The CXD-1160's process 32 bits of data at a time and perform computation for equalization, tone control, filtering, compression, and expansion. The CXD-1355Q's specialize in the digital delay and reverberation needed in surround-sound processing: a pair of 1-megabit

RAM (random-access memory) chips provides the storage needed. Together, the four DSP chips can do all the processing that analog preamplifiers can, and then some, with potentially better specifications and the capability of storing a variety of control settings for later recall.

The design of DSP products requires a new way of thinking. The CXD-1160 contains a coefficient memory, a data memory, a multiplier, an adder, and an input/output circuit, all under a microprocessor's control. The same architecture can be used for many types of audio processing, depending on how you program it. For example, the volume-control function works by loading data for an attenuation curve in the coefficient memory, then multiplying the audio data by that curve to generate new data for an attenuated signal. Similarly, a filter could be designed by loading in filter coefficients, multiplying the audio data, delaying for a few samples, then multiplying again. The result would be equalized data.

In all cases, the processing is performed on digital data. According to how the DSP chip is programmed, the data leaving the DSP chip will differ from the data entering it. With more complex programs, the signal leaving the preamplifier could be attenuated, equalized, and compressed all at once.

ABOVE all, it is important to remember that DSP is primarily a function of "software," or programming. A DSP chip like the CXD-1160 is designed for general-purpose audio computation. As such, its signal-processing modes are completely open. Once A/D and D/A conversion and suitable computation hardware are provided, the features of a DSP product are defined simply by the lines of program code that control its operations, and the code is limited only by the programmer's creativity.

When the TA-E1000ESD is digitally interconnected, through coaxial cable or optical fiber, with a high-quality CD player and DAT recorder, they form an awesome audio system. For example, you could digitally record from a CD to a DAT, equalizing and compressing for optimal playback in your car. Surely we will soon see CD players and DAT decks without internal converters, designed expressly to work with products like the TA-E1000ESD. It is just one of the first DSP products to be introduced. Imagine what will follow as we move toward an all-digital future.

—Ken C. Pohlmann

Beyond the Tests

Our overall reaction to the Sony TA-E1000ESD was one of amazement and awe at its capabilities, tempered by a trace of disappointment at its few shortcomings. Only a few years ago, when digital signal processors first appeared on the scene, they cost more than the entire TA-E1000ESD preamplifier does today. In that short time, digital technology has advanced to the point where the promise of "doing everything digitally" has almost been fulfilled—witness the TA-E1000ESD's superb parametric equalizer, whose ease of use and sonic effectiveness make conventional tone controls or even a graphic equalizer seem like a poor joke in comparison.

Surround sound continues to be one of the most intriguing applications of digital signal processing. As implemented in the TA-E1000ESD, it allows the listener (theoretically, at least) to place himself electronically in any seat of a 2,500-seat hall, to adjust the hall's dimensions and acoustic treatment to suit his taste, and to re-create the sound of almost any recorded performance as it would be heard in that hall, all in the comfort of his listening room.



Now, perhaps all that *can* be done with the TA-E1000ESD. It would take great patience, and a very great amount of time and practice adjusting its parameters, to achieve that goal. In the final analysis, it would also take a very skilled, trained listener and concert-goer to know when the ideal combination of settings has been achieved. We sensed this particularly when experimenting with the various hall-size and wall-treatment parameters, which are adjustable in such small steps that it was sometimes difficult to be sure that a change had been made. It probably had—our measurements

confirmed that almost all of the controls produced measurable effects, though not always audible ones. The only exception was the dynamic expansion: In our sample, it produced no audible *or* measurable effects, although the compression circuit worked fine. Discussions with Sony technical personnel confirmed our suspicion that this deficiency, like the inadequate phono-overload margin at the line outputs, resulted from a misadjustment or defective component in the test sample.

While to us five video inputs seem a bit much, the TA-E1000ESD certainly has no shortage of useful features, and its digital Dolby Pro Logic system should be welcomed by videophiles. The hall-simulation feature produced excellent results, at least as good as we have heard from any other surround-sound device in our own listening room, as well as being fairly easy to use after a bit of practice with the controls.

We must confess to being a bit disappointed at some of our overall (input to output) measurements, which occasionally fell far short of meeting digital performance standards. Channel separation and separation between inputs were clearly limited by stray coupling in the analog circuits. Distortion readings

were higher than those of a CD player, or even of most good analog preamplifiers (the distortion may well originate in the unit's analog sections). The phono-preamplifier section may be a conventional analog design; there was no clear evidence, for instance, that the RIAA playback equalization was done digitally—it was accurate, but no more accurate than many preamplifiers we have measured. Its input-overload level, however, even at the tape outputs (where it met Sony's 90-mV rating), was not typical of most current analog preamplifiers.

Due allowance must be made for

the fact that our test sample was the first TA-E1000ESD unit to reach the United States; regular production models will not be identical internally. Lacking any standard digital test procedures, we had to evaluate its performance the same way we would evaluate an analog preamplifier, which might not have been fair to the TA-E1000ESD.

We did, however, use it with a Sony 608ES CD player, some of whose performance parameters we measured on its own and then through the output of the TA-E1000ESD (using optical digital coupling between the two units). Much of the measured performance of the 608ES is quite literally state of the art, and we were curious to see how the D/A converters of the TA-E1000ESD compared with those in the CD player.

WELL, although the preamplifier's converters did not quite match those of the CD player, they certainly qualified as excellent performers. For example, the frequency response of the 608ES was down about 0.1 dB at 20,000 Hz, and the preamplifier's converters produced a 0.17-dB reduction at that frequency—hardly a serious degradation. Similarly, the 608ES had the lowest interchannel phase shift we have yet measured, varying only 0.05 degree from 5,000 to 20,000 Hz; the preamplifier's phase shift was 2 degrees over that range. Only in its noise spectrum did the preamplifier come up short, with typical readings between -73 and -90 dB, whereas the CD player's noise was between -130 and -140 dB over most of the audio range. As with most of our other criticisms of the TA-E1000ESD, these noise readings certainly resulted from a problem in its analog circuits and were quite possibly unique to our preproduction sample.

Our conclusion is that digital signal processing in consumer audio is finally here, and its applications will grow steadily. The digital aspects of the TA-E1000ESD left little or nothing to be desired, and there can be no doubt that a revolution in consumer audio product design is under way. The fact that so much performance can be packaged and sold for only \$1,000 is in some ways as impressive as the performance of the TA-E1000ESD itself. □

DIGITAL UPDATE

SOPHISTICATED NEW EQUIPMENT FOR THE NINETIES

BY KEN C. POHLMANN

JUST for the heck of it, I recently took my old Magnavox FD1000 out of mothballs. As you may recall, this compact disc player was one of the very first on the market (I picked mine up in 1983). I dusted it off, wired it into my system, opened the hinged door (gee, what memories), put in a disc, and sat down to listen. Frankly, it sounded pretty good. In fact, I was surprised that this first-generation, 14-bit player stood up so well compared with the latest fruits of digital audio technology.

But don't assume that digital audio engineers have been resting on their laurels these six years. Certainly, after the revolutionary advent of the compact disc, advances have been measured by relatively smaller gains, but a good deal of ground has been covered since CD's first raised eyebrows at record stores. In fact, unless you've reviewed the progress lately, you may be surprised by the increasingly sophisticated and complex state of affairs in digital audio. If you are planning on buying any audio equipment this fall (or video equipment, for that matter), you'll probably get a little dose of future shock.

Oversampling and D/A Conversion

Compact disc players have come a long way since the FD1000. Although it blazed the trail for over-

sampling, that technique is now considered *de rigueur*. If anyone still makes a player with analog "brick-wall" filtering, I would avoid it. Such filters can introduce phase distortion and other anomalies and are prone to noise and aging problems. Instead, look for oversampling, sometimes called digital filtering. With oversampling, the filtering is primarily done in the digital domain, and the results are generally superior.

The optimum oversampling rate is still debatable, however. Rates of two, four, and eight times the standard CD sampling rate (44.1 kHz) are commonly offered, and some "audiophile" players use even higher rates.

The FD1000 used dual 14-bit digital-to-analog (D/A) converters. Although good CD players today still use dual D/A converters, a 14-bit design is passé. The norm is 16 bits, and 18- and even 20-bit designs are common. Of course, more bits does not necessarily mean a better converter—check the low-level linearity in test reports and spec sheets to verify performance.

While eight-times-oversampling, 18- or 20-bit players are still considered state of the art, they are being challenged by newer technology. Interestingly, the race now is not toward bigger and bigger numbers but toward much smaller ones. Specifically, 1-bit conversion technology is shaking up the industry.

For instance, there is the "Bit Stream" system developed by Philips. Instead of using converters that process 16 or 18 bits at a time, this system performs oversampling and noise shaping, yielding a 1-bit pulse-density-modulation (PDM) output at a rate of 11.3 MHz. The PDM signal represents the audio waveform directly, instead of in coded form. Because most of the conversion process is performed in the digital domain, instead of mainly in the analog domain as with conventional converters, the result can be much more accurate. Another approach to 1-bit conversion is represented by Sansui's "Linear and Direct Conversion System," incorporated in the CD-X711 player (see page 49).

NEW technology will also affect analog-to-digital (A/D) conversion. Next-generation digital audio recorders will employ single-bit converters and use oversampling techniques. As a result, the audio signal actually recorded on a CD will (at last) benefit from oversampling technology the way CD players have. We can look forward to an audio signal chain that is absolutely linear in phase from end to end.

Digital Recorders

Although it is convenient to gauge progress in digital audio technology through its appearance in CD players, it is flourishing in many other areas as well. Digital audio tape (DAT) decks have been on the back burner of the U.S. consumer market (they are already on the front burner for recording professionals), but now it seems that consumer DAT will be released here after all. At last, equipment manufacturers and the recording industry have reached an agreement that will pave the way for widespread sale of DAT decks in the United States. Although DAT products have been slow sellers in other countries, it will be a welcome format here and should certainly see some success. Fortunately, when evaluating DAT recorders, you can look for most of the same advanced engineering features that a good CD player has. In addition, mechanical integrity of a DAT recorder is especially important because of the complexity of the tape transport.

Another digital audio recording system is looming on the horizon,

and that is the recordable optical disc. Although dozens of "write-once" recordable optical-disc storage systems are available for computer applications, audio manufacturers have trod lightly in this area, aware that a worldwide standard is a prerequisite for marketing success and intimidated somewhat by DAT's political problems. Still, there is no shortage of new optical-disc technology waiting in the wings.

The name given to CD's that can be recorded once, but not erased, is CD-R. Japan's Taiyo Yuden and its U.S. subsidiary, That's America, have shown discs that can be recorded with a special recorder, then played back on a normal CD player. The discs are coated with an organic pigment that is initially transparent but darkens when hit by the recording laser beam, creating the equivalent of a CD pit. Taiyo Yuden has begun pilot production of CD-R's in a plant capable of producing 200,000 discs per month.

Although it's convenient to gauge progress in digital audio technology through its appearance in CD players, it is setting new standards in traditional components too.

Other companies have shown CD-R systems using a recorder developed by Yamaha and Philips. Fuji has demonstrated a recordable CD aimed at the computer market, and Meridian has shown its CD Professional system, aimed at the CD-ROM (read-only memory) market. In both cases, the disc is fully compatible with regular CD players and can be handled like an ordinary CD. Although a write-once recording concept would be new to audio consumers, studies show that 60 percent of cassette tapes sold are recorded on only once.

Recordable/erasable discs (sometimes called CD-E) have been developed by many companies, including Sony and 3M, for computer applications. Canon has developed a rewritable optical-disc drive for the NeXT computer; current volume price is \$1,500 for the drive and \$50 for one disc.

Tandy made a big splash last year

when it announced the development of a rewritable optical audio disc that could enter the consumer market within twenty-four months along with recording CD players that could sell for less than \$500. The company is still sticking by the promise and predicts that its THOR-CD system (Tandy High-Intensity Optical Recording CD) will appear on time and within budget. Discs made on a THOR-CD recorder would play on any CD player, so you could, for example, record a disc at home and then play it in your car CD player. But Tandy must iron out limitations in the number of times its record/erase cycle can be repeated. Surely a hundred cycles would be sufficient for any audio consumer. One thing is certain—recordable CD's, in one form or another, are heading your way in the Nineties.

Amps and Preamps

Digital audio is setting new standards in traditional audio components too. Digital preamplifiers are likely to become the next hot item. Sony's TA-E1000ESD, for example, is truly a breakthrough product, providing equalization, compression, expansion, reverberation and delay, and Dolby Surround decoding all in the digital domain (including Dolby B decoding in the surround channel). This preamplifier could be the basis for a completely digital audio/video control center. As such products are introduced to consumers, videodiscs and ambience processing will certainly win devotees.

MORE-conventional components are also undergoing transformation to accommodate the fidelity of a CD input signal. For example, the Technics SE-M100 power amplifier has eight-times oversampling and 20-bit D/A conversion built in, so that it can directly accept digital signals (as well as the analog variety) for amplification via analog means. Direct digital connection of a CD player to a power amplifier is the straightest and best path unless you need the features of a preamp.

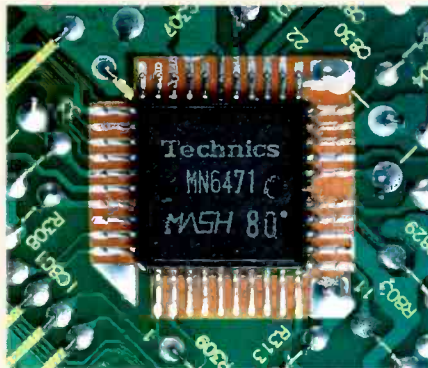
I would strongly recommend looking for digital inputs and, where appropriate, outputs on any preamplifier or power amplifier you consider buying, along with digital outputs on any CD player or other digi-



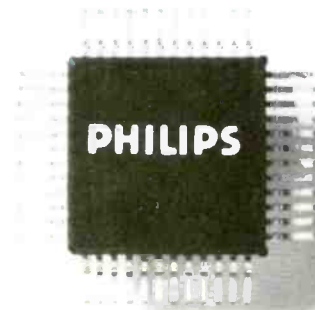
High-performance digital-audio circuitry in the Philips CDV488 combi-player can handle everything from ordinary compact discs to CD-V's and videodiscs. Digital technology is also used in the video section to provide special effects, such as freeze-frame, for CD-V's and CLV videodiscs. The supplied remote control is, to put it mildly, comprehensive. Suggested list price: \$1,300.



The luxurious Nakamichi 1000 digital audio tape (DAT) deck has its tape transport in one chassis (right) and its A/D and D/A converters in another. Inputs, outputs, and switching for a second digital source add versatility to the converter unit. A remote control is included in the \$10,000 list price.



The most recent twist in digital audio is 1-bit digital-to-analog (D/A) conversion, which is said to eliminate the low-level nonlinearities that are the bane of traditional decoding methods. Sole contenders at the moment are the chips from Matsushita, of Technics, and Philips.



Among the first products to make use of 1-bit D/A conversions is Harman Kardon's HD7600 CD player (\$599). Its Bit Stream converter—not to be confused with the Philips Bit Stream system—uses the Matsushita MASH/1-bit DAC chip.





Sansui has turned to 1-bit conversion for its new Vintage AU-X911DG integrated amplifier (\$1,250). Its Linear and Direct Conversion System (LDCS) is built around the Matsushita MASH/1-bit DAC chip. Rated at 100 watts per channel, it has one optical and three coaxial digital inputs as well as a full range of analog inputs.

SONOSONON



Sony has used digital signal-processing (DSP) technology to pack some unusual features into its D-555 Discman portable CD player (\$450). Included are a bass-boost function for improved low-frequency reproduction with headphones, five-band graphic equalization, variable compression, and spatial enhancement. The player has dual D/A converters with eight-times-oversampling digital filters and noise shaping.

SONOSONON



One of the most exciting applications of DSP is embodied in JVC's XP-A1000 Digital Acoustics Processor, which can simulate the acoustics of many different spaces, from a small jazz club to a cathedral, in the confines of your listening room. Programs for a variety of spaces are built in, but all can be extensively modified to suit your taste. Price: \$1,200.

SONOSONON

tal source component. Digital interconnection will inevitably supersede analog connections for digital components. Furthermore, I would insist on optical inputs and outputs in addition to coaxial ones; there's a good chance that fiber optics will triumph over copper as well.

Speakers, Video, and Beyond

There is no fully digital loudspeaker (yet), though some manufacturers have begun promoting the term to acquaint the public with powered loudspeakers that can accept line-level digital audio signals directly. For example, the Meridian D600 system contains a digital filter, error-correction circuits, a D/A converter, and three power amplifiers in each of the loudspeaker towers. It has both optical and coaxial digital inputs, but for those still in the dark ages, there are also line-level analog inputs.

Although the prospects of high-definition television (HDTV) in the U.S. are still cloudy, television sets are already profiting from digital technology. The circuitry for improved-definition television (IDTV) found in some TV sets, while completely compatible with the NTSC broadcasting system used in the U.S., can provide a significantly improved picture thanks to digital signal processing.

Future television technology will be increasingly digital—more like computer technology than traditional TV technology, in fact. The research that enables companies to develop future television systems could also make them powerhouses in computer and military applications, which is one reason HDTV is such a sensitive political issue.

Finally, we should note that digital audio is, after all, still a very young technology. Future developments will surely eclipse present products. For example, several laboratories around the world are working on the so-called "Rainbow" disc. It uses a material capable of storing a full visual spectrum in one spot; the information appears as a Fraunhofer pattern—a type of optical diffraction. Each spot could represent 1 million bits of storage, which would make the equivalent of 100,000 complete music albums fit on one disc. If you listened to the disc for eight hours every day, it would take you only thirty-four years to hear the whole thing. Talk about a long-playing record. □

AUDIO NEWSPEAK

A/D (analog-to-digital) converter: An electrical circuit that converts an instantaneous point of an analog signal into a digital word, represented as a binary number.

bandwidth: The range between the lowest and highest limiting frequencies. Also, the maximum amount of information (the number of bits) that can be transmitted or stored on a CD.

bit: The smallest unit of digital information. A bit can store only two conditions, represented by a 0 and a 1. Acronym for *binary digit*.

bit rate: The frequency at which bits appear in a bit stream, or a grouping of bits. The bit rate of raw data from a CD is 4.3218 MHz.

Bit Stream: A 1-bit A/D and D/A oversampling conversion method developed by Philips in which the audio signal is represented through pulse-density modulation (time averaging) at a sampling frequency of 11.3 MHz.

brick-wall filter: A filter with steep attenuation characteristics. Anti-aliasing and anti-imaging filters sometimes have brick-wall characteristics.

CD-E: Proposed optical-disc technology similar to the compact disc but allowing audio data to be written, read, erased, and written again.

CD-I (compact disc interactive): A kind of CD system capable of storing digital audio, video, text, and graphics information in which the user has control over content and presentation.

CD-R (or CD-WO): Proposed optical-disc technology similar to the compact disc but allowing audio data to be written once and then read only.

CD-ROM (compact disc read-only memory): A method of storing digitally coded information, usually computer- or database-related, on a compact disc. One CD-ROM disc can store about 300,000 typed pages.

D/A (digital-to-analog) converter: An electrical circuit that converts a binary-coded word into an equivalent analog voltage. A CD player may employ one 16-, 18- or 20-bit D/A converter for two audio channels or, preferably, use one such converter per channel.

digital filter: Any filter used in the digital domain. CD players use oversampling to raise unwanted frequencies away from the audio range. Digital filtering does not produce the phase distortion common to analog filtering.

DSP (digital signal processing): Use of digital circuits to perform audio functions such as level adjustment, equalization, compression, expansion, and surround-sound decoding.

EFM (eight-to-fourteen modulation): An encoding technique used in CD mastering to convert 8 bits of digital data to 14 bits. This increases data den-

sity and enhances tracking. CD players perform EFM demodulation.

fiber optics: The technology of using light as the information carrier instead of electrical impulses. Glass-fiber "tubes" are used to transmit modulated information instead of copper wire.

I/O (input/output): Equipment or data used to communicate from one circuit or system to another.

low-pass filter: A filter that allows all frequencies below a specified point to pass. Frequencies above that point are attenuated. Anti-aliasing and anti-imaging filters are two kinds of analog low-pass filters.

1-bit conversion: Method of performing A/D or D/A oversampling conversion in which a single bit at a time, at a very high sampling frequency, is used to convey the audio signal.

oversampling: A filtering technique used in compact disc players prior to D/A conversion. The 44.1-kHz signal from the CD is sampled at some multiple of that frequency (usually two, four, or eight times), which has the effect of raising undesirable signals created by the sampling process well above the audible range. These spurious signals are then removed by an analog anti-imaging filter with a gentle slope.

PCM (pulse-code modulation): An A/D conversion method in which analog information is digitally encoded in a bit stream; the basis of most digital audio recording.

PDM (pulse-density modulation): An analog conversion method in which the waveform of an analog signal is represented by variations in the average number of fixed-width pulses per unit of time.

PWM (pulse-width modulation): An analog conversion method in which the width of pulses in a pulse train represent the waveform of an analog signal.

quantization: The process of assigning a measured value, expressed as a binary word, to the sample of an analog signal; performed by the A/D converter.

ROM (read-only memory): A form of memory from which data can only be read. New data cannot be added after initial storage. The present compact disc system uses a read-only memory.

sampling: The process of discretely defining a signal at a particular point in time and subsequently representing it as a number.

sampling rate: The number of times an audio signal is sampled each second. The standard sampling rate (or frequency) for the compact disc format is 44.1 kHz, which means each second of sound is encoded by 44,100 numbers for each channel in a stereo system. The professional sampling rate is 48 kHz, which is used for master recordings on magnetic tape. □



SYSTEMS

Listen while you work

by Rebecca Day

THERE are a lot of advantages to working at home. You can raid the refrigerator whenever you want, take a cat nap, or catch a news break on TV. And if you're a stereo enthusiast, you can enjoy your favorite music while you work. Stephen Fox, a sales manager for a credit-card company, does just that. And to create the optimum listening environment, he fitted his office—a 12 x 15-foot room in his suburban St. Louis home—with a 200-watt-per-channel stereo system.

Fox admits that you don't really need two 100-watt stereo power amplifiers for such a small space, but he bought his second NAD Model 2200 to drive the subwoofer in a satellite/subwoofer combination that didn't live up to his expectations. "The sound was too muddy, probably because of the size of the room," he said. He got rid of the speaker system but kept the amplifier and now runs both Model 2200's bridged in mono, one per channel. The result, he said, is a cleaner sound from his new Wharfedale Model 507.2 speakers: "I don't listen to them loud, but the extra power does make a difference."

Completing the system are an Adcom GFT-555 tuner, a Nakamichi RX-202 cassette deck, an NAD Model 6240 deck for dubbing, an Adcom GFP-555 preamplifier, and a Technics SL-P720 CD player. Fox placed the speakers on Chicago Speaker Stand pedestals "to get the best sound stage" when he is sitting at the desk.

He houses the equipment, cassettes, CD's, and accessories in a teak dresser that he had modified by a cabinet maker to hold sturdy oak shelves rather than drawers. He mounted incandescent lights in the top of the cabinet so he could see the components more easily. The lights and equipment are plugged into a remote-controlled DAK Industries spike protector on the top left shelf of the cabinet so that everything can turn on with the flip of a switch.

Fox tossed out his turntable a couple of years ago, turning to cassettes and CD's for less space, greater convenience, and a "sound I couldn't get from my turntable. The next step is DAT," he said, "if it ever gets off the ground." □





Jessye Norman

“I want to communicate, to be understood in many ways and on many levels.”

BY WILLIAM LIVINGSTONE



IF success can bring happiness, the American soprano Jessye Norman ought to be the happiest opera singer alive. The possessor of a million-dollar smile and a multi-million-dollar voice, Miss Norman is in demand at the world's greatest opera houses, concert halls, and recording studios. As she makes her majestic way from one important music center to another, she is greeted by lavish praise from critics and by adulation from the public.

In France the entire nation seems to have given its collective heart to Jessye Norman, and she was invited

to be the official singer of the national anthem, *La Marseillaise*, in Paris during the celebration of the Bicentennial of the French Revolution on this year's Bastille Day, July 14. After a recent recording session in New York, I talked with Miss Norman about her career and asked her about her relationship with the French public.

“The invitation to sing *La Marseillaise* at the Bicentennial was exciting, and I was delighted to be able to do it,” she said. “I felt honored—and humbled—by being chosen. Although I've performed a great deal in France, I don't maintain a resi-

dence there. I'm not French after all, and they could easily have chosen a French person to sing their anthem on such an important occasion.”

On various other state occasions Miss Norman has performed for the President of the United States or the Queen of England and has done so without fee. In Paris this summer she sang *La Marseillaise* “for love, not money” as a tribute to France.

“My ‘love affair’ with the French public began the first time I went to France fifteen years ago,” she continued. “I sang several concert performances of *Aida* and one or two

recitals. I found something there—I don't know how to describe it—a *receptive* quality that was unusual and totally spontaneous. That has continued, and it's very gratifying. It makes you feel really good that people at home think you are worth their interest, but it's incredible to be so warmly received in a foreign country."

MISS Norman's success in France is based on her performance of French music, not spirituals or the music of Gershwin or other American composers. "Yes, I've been singing French in France, and they've loved it because it shows that I've made a terrific effort since I wasn't born singing this language. To enjoy the marvelous songs of Poulenc and Satie the audience must be able to follow the text, and I know if I pronounce the words correctly, the text will be understood. I love watching the faces of the people who are listening as I sing these songs and know that they understand. I think that's what every performer wants: to communicate, to be understood in many ways and on many levels."

Jessye Norman was born in Augusta, Georgia, on September 15, 1945. Her father was in the insurance business, and she grew up in a prosperous middle-class family. Like a great many American singers, she got her first musical and performing experience at school and church. Later she earned a Bachelor of Music degree from Howard University in Washington, D.C., did postgraduate study at the Peabody Conservatory in Baltimore, and took a master's degree in music at the University of Michigan in Ann Arbor, where her teachers included the noted French baritone Pierre Bernac.

Also like a great many American singers, she went to Europe to begin her career, which promptly took off in a way that could be matched by few others from the United States or anywhere else. In 1969 she made her operatic debut as Elisabeth in *Tannhäuser* at the Deutsche Oper in Berlin. In the 1970's she began the tours that have kept her performing throughout Europe, North and South America, and Australia.

In 1983 she made her debut at the Metropolitan Opera, where she has distinguished herself not only as a major singer but as an actress of rare

gifts. This year she outdid herself histrionically in the double bill of Bartók's *Bluebeard's Castle* and Schoenberg's *Erwartung*, and her first Met performances as Sieglinde in Wagner's *Die Walküre* were artistic and popular triumphs.

Miss Norman sings regularly at the most prestigious summer festivals, such as Tanglewood, Edinburgh, Aix-en-Provence, and Salzburg. When she performed in Japan, one critic praised her singing for its "combination of intelligence and love." Another described her as "a divine presence with saintly ges-

In the hitherto unaccustomed role of music critic, President George Bush reviewed Miss Norman's performance of La Marseillaise in Paris as follows: "Actually, one bursts with pride over Jessye Norman. It makes you want to, you know, rev up those missiles and run out and fight for France."

tures," and a third said she had "the touch of magical power."

A prolific recording artist, Miss Norman has won the highest record awards in the United States, England, and France. She has honorary doctorates from Howard, Michigan, Sewanee, Brandeis, the Boston Conservatory, and Harvard, and she's an honorary member of the Royal Academy of Music in London. The French government has made her a *Commandeur de l'Ordre des Arts et des Lettres*, and the National Museum of Natural History in Paris has named an orchid for her.

What does it feel like for a singer to be told she has "the magic touch"? To have an exotic flower named for her? To have it demonstrated in one way after another that (musically at least) she's got the whole world in her hands? To hear Jessye Norman tell it, it feels pretty good. In fact, the words that came to her lips most often as we chatted in a deserted recording studio were "wonderful" and "marvelous."

For Philips Classics she had just completed recording *Erwartung* with the Metropolitan Opera Orchestra conducted by the Met's artistic director James Levine, and she was filled with praise for her "incredible colleagues." She de-

scribed the Met musicians as "a great orchestra," and speaking of Levine, she said, "Jim is the best cheerleader in the world. When he has to make corrections, he does it in such a positive fashion."

For a long time Miss Norman has had an exclusive contract with Philips, but now that the PolyGram labels are one family, she is freer to record for London and Deutsche Grammophon. In the DG recording of *Die Walküre* led by Levine, she sang the role of Sieglinde.

I asked her how it feels in performance to sing the arching, climactic phrase with which Sieglinde greets the news that she is pregnant and that her child will be the noble hero Siegfried: "*O hehrstes Wunder! Herrlichste Maid!*" ("O most miraculous wonder, most glorious woman!").

Great, that's how it feels. Miss Norman explained, "It's in absolutely the right key, you've had a moment or two to rest before you sing it, the way it's written is perfectly prepared for you, and that beautiful musical phrase is completely supported in the orchestra. Then to have a conductor [Levine] who agrees with me to take it just a little bit slower, a bit more expansively. Well, I think it is the most marvelously satisfying few seconds one can have on stage!"

What, then, is it like to come out for a curtain call afterwards and have a standing ovation with three or four thousand people screaming their heads off?

"**T**HERE'S nothing quite like it," she said. "When I hear yelling at a football game, I wonder sometimes if the players are enjoying that. But when what you do comes *out of your body*—when it's a noise that you are making in the moment—then to have it go well and have the audience respond to it . . . well, it's wonderful. I don't know how else to put it. It's marvelous. I wish our jobs could be like that all the time, but maybe it's better that they're not. It keeps us humble."

Tremendous acclaim has given Miss Norman a pretty good idea of her worth, but she carries it with dignity and modesty. Her speaking voice is full and rich, and she bears down on words she wants to emphasize. The precision with which she enunciates words may strike some

as affected, but I think it comes from having had elocution lessons as a child, from working constantly in foreign languages, and from having to project the words she sings in large theaters and concert halls.

SHE laughs easily and makes little jokes at her own expense. Another famous diva refers to her vocal instrument as The Voice, as though it were a disembodied wonder of the world leading an independent life; Miss Norman sometimes speaks of her own characteristic sound simply as "my noise."

Anyone who has heard Jessye Norman sing Satie's cabaret songs knows that she has a sense of humor, but she gets few opportunities to show that on the operatic stage. "I can have a little fun in the prologue of *Ariadne auf Naxos*," she said, "but comic operas like *The Barber of Seville* are not for me. I sing Rosina's 'Una voce poco fa' because it's good for my voice to keep it flexible, but I do that quietly at home. One comic opera I'd like to do on stage is [Offenbach's] *Belle Hélène*. I think she is so funny!"

Most of the characters Miss Norman portrays are not funny at all. She sings the stately Mozart heroines, the more lyrical Wagnerian roles, and a whole collection of Greek and Roman queens and princesses in operas by such composers as Berlioz, Fauré, Gluck, Haydn, Purcell, Strauss, and Stravinsky. Her discography also includes lieder by Brahms, Mahler, Schubert, Schumann, and Richard Strauss, but, surprisingly, Verdi is represented only by *Il Corsaro*. Where are her recordings of the Verdi roles that seem ideally suited to her opulent, dramatic soprano voice?

"I need to feel absorbed by the character I have to sing," Miss Norman said. "If I had a different natural sound, perhaps I would sing Lady Macbeth of Verdi, a wonderful character in a fabulous opera, but I'm not sure I'd give it the right quality of noise. I've often thought of *Trovatore*, but the character of Leonora is elusive. It's one of the most beautiful operas, but what is that character all about?"

"I can't explain why, coming from Georgia, I'm so interested in Greek heroines, but I am, whether it's Phèdre in an opera by Rameau or Dido in *Les Troyens* of Berlioz. In Purcell's *Dido* or in *Les Troyens*,

when duty calls and Aeneas decides to leave, I can feel that the *world* is coming to an end because Dido is abandoned. On the other hand, when Aida and Radames don't get together, I just think: Oh, well, it'll be all right. Aida will find somebody else.

"But who knows? I may fall out of bed tomorrow and decide that if I don't do *Forza del Destino*, I'll never be able to carry on."

Until that happens, she's got plenty to carry on with. Some of her roles are traditionally for sopranos, others for mezzo-sopranos. Her



*"Whenever possible,
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its own."*



lower register is so well developed that I asked Miss Norman if she had started as a mezzo. She answered, "When I began singing, I had three separate voices. My work over my professional life has been to connect them. I feel that I've made some progress in that respect, and it's now more comfortable to use all parts of my voice."

Her most recent recording is Bizet's *Carmen* (Philips 422 366-2, three CD's), which should be in stores by the time you read this. The other soloists are Mirella Freni (Micaëla), Neil Shicoff (Don José), and Simon Estes (Escamillo), with the Orchestre National de France conducted by Seiji Ozawa. The title role, which Miss Norman sings, is

often thought to be a mezzo part, but she doesn't think she sounds like a mezzo in it. The advance word is that this performance is not like everybody else's Carmen.

"No, it isn't," she said. "I've played some of the tapes for people, and they usually say, 'Boy, it's really different.' My aim was not to make it different, but to sing what was a comfortable interpretation of this role for me. It will be interesting to hear the reactions.

"After we made ours, I listened to some other recordings, and when I heard Maria Callas's *Habanera*, I thought, my God, it's fast! When I recorded it with Seiji, I felt that when Carmen comes out of the cigarette factory, she's so *sure* of herself that she's not just singing the *Habanera*, she's taunting the men. She has already decided that somebody in that group is going to be seduced simply because she feels like it."

Is Carmen really in love with either José or Escamillo?

"No, I don't think Carmen experiences romantic love or the kind of real love and devotion known to Pénélope or Alceste. She only falls in love with Escamillo because he's the man of the moment. In comes this fabulous-looking toreador with the crowds behind him, and she's forgotten about Don José. She takes one look at Escamillo and thinks that'll be next, thank you very much. A new challenge."

What about fate? Does Carmen collaborate with fate to cause her own death?

"I don't think so," Miss Norman said. "For Carmen her gypsy superstitions are like a religion. When she sees death in her cards, she accepts it as inevitable, but she does nothing to make it happen. Since she's not afraid of it, she can stand up to José when he challenges her at the end. 'If you're going to strike me,' she says, 'go ahead and do it or get out of the way.'"

Since the character seems to be so manipulative in her relations with men, I asked Miss Norman if it would be fair to describe Carmen as a female sexist. She shrugged and said, "Sure." But she doesn't care for imposing twentieth-century sociology on nineteenth-century operas, the sort of thing that has been overdone especially with Wagner's cycle *Der Ring des Nibelungen*. "It may be interesting to analyze *The Ring* in terms of economics, philo-

sophy, or psychology, but art is about much grander things."

The grandeur of *The Ring* continues to appeal to her, and she hopes some day to sing the role of Brünnhilde in *Die Walküre*. "I'm not sure I'd be terribly good at it, but I love the role. You couldn't ask for better entrance music [than *Hojotoho*], and the music she sings in the third act is just to die for."

SHE has finally been scheduled to record Wagner's *Tristan und Isolde* for London/Decca with Plácido Domingo conducted by Sir Georg Solti. "I've been flirting with this role forever," she said, "so I'm looking forward to it. I'm also going to record *Fidelio* with Dresden conducted by Bernard Haitink. With Boulez I've got to finish a recording of Berg songs that we've been working on for ages. With Riccardo Muti I've just recorded Brahms's *Alto Rhapsody*, a piece I love."

No singer who has a lot of new music to learn can spend much time listening to other artists' records, but Miss Norman says she listens to recordings when she can, not to devise an interpretation or learn the music, but for education in the history of her art. "To appreciate this profession you must be aware of people who were singing long before you were thought about. I didn't hear Kirsten Flagstad or Callas live, so I'm dependent on records to tell me something of what they were. A person I listen to a great deal is Lotte Lehmann, and I can't put my finger on the exact reason. Even in her studio recordings there is a vitality in the sound she makes and an expressiveness that capture me and make me love listening to her."

Managers and secretaries keep track of Miss Norman's performance schedules, recording sessions, and travel arrangements, but only she can decide when to say no to new projects and set aside time for her private life (which she keeps very private). "I'm much firmer about that than I used to be because one can get terribly preoccupied with wanting to satisfy everyone, but I only have these two little things fluttering about in my throat, and they do get tired and need rest."

She rests by entertaining friends at home with small dinner parties. She swims a great deal and loves

nature—the ocean and the woods. "When I'm working, I can't always take a walk because I have to worry about rain and cold and getting a chill—I *am* my noise, and I have to look after it. Whenever possible, I like the freedom to take a walk on a hill without having to worry. It puts a lot of one's life in perspective to see how tall a tree grows all on its own."

Augusta, Georgia, is still a part of Miss Norman's life because she is involved with a number of educational institutions there. She helps raise money for black colleges, and she enjoys her work with the Girl Scouts. She feels a strong responsi-



bility to certain causes, particularly that of Save the Children.

In London, she maintains a pied-à-terre, but her home now, both physically and spiritually, is in a wooded area north of New York City in Westchester County. "I still have many ties to the South, memories and associations. My house in Westchester is completely surrounded by azaleas because in March and April the azaleas are unbelievably beautiful in Georgia. Some of these things, such as the odor of flowers, are absolutely Proustian. One whiff of four-o'clocks and you feel that you are five years old again and sitting at your mother's feet, and you remember what it tastes like to drink water from a well. It's wonderful to have those beginnings, those foundations, but lives change."

The eighty-year-old economist

Peter Drucker, who has had a brilliant international career as a management consultant, advises young people in pursuit of success and happiness to find out what they are good at and try to make a living doing that. Drucker further advises the young to abandon any job that does not continue to stretch their minds and teach them new things.

Thinking independently, Jessye Norman seems to have worked out just such a business plan of her own. Her fall schedule includes the opening concert of the New York Philharmonic on September 20, to be telecast nationwide on PBS. When I asked her if she thinks much beyond these major engagements that are making her name a household word, she answered, "Of course. I want to continue to enjoy my life and my profession. To keep it from becoming routine one must change, do new things, and go to new places."

New things on her mind include the possibility of singing *Carmen* on stage and she's more than a little interested in Bellini's *Norma*. New places on her agenda include Hong Kong and Taipei, where she will sing this fall for the first time. While in the Orient, she will return to Tokyo to take on the challenge of a double bill of *Erwartung* and Poulenc's *La Voix humaine*. "That should exhaust me, shouldn't it?"

ALTHOUGH recording *Erwartung* must have been exhausting, and we were chatting on into the twilight in a very unglamorous setting, I commented to Miss Norman that despite it all she seemed happy that afternoon. She flashed her incredible smile and said, "I am happy. The session went very well today."

"The Met orchestra is very supportive to begin with, but when you've got something as complicated as *Erwartung*, it's wonderful to have all the musicians in the orchestra *interested* in it. Whenever we took a break, I could hear them practicing difficult passages they were going to record in a little while. This creates a marvelous atmosphere that you don't get very often, and that makes me happy—the feeling that we are all in it together."

"I love—really *love*—being able to work at this level. It taxes me in every way, and that's something I enjoy." □



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BEST RECORDINGS OF THE MONTH

Stereo Review's critics choose the outstanding current releases

JASON AND THE SCORCHERS: ELEMENTAL ROCK

JASON and the Scorchers play rock-and-roll as if their very souls hang in the balance. There is something elemental about their music, which for all the fullness of their new recording, "Thunder and Fire," is not really complicated. With the basic lineup of singer, guitarist, bassist, and drummer, they fulfill the essential promise of rock-and-roll: the young teaching the young, through amplified contempt, what's right and wrong about life. Jason and the Scorchers may not see it quite this way, but they play as if they believe and revel in the power of their music.

"Thunder and Fire" is the band's third full-length release and its first on A&M. Based in Nashville, Jason and the Scorchers haven't broken through to a larger market, but that isn't the fault of their recorded work. Singer-lyricist Jason Ringenberg writes with the apocalyptic force of the Deep South and sings with the adenoidal accent that marks him a true son of Music City USA. You can hear the country influence occasionally even in the harder songs, and it shows up strongly here in *Close Up the Road*, which is as country as you can get without a pedal-steel guitar.

Aside from that little bit of country flavor, though, Jason and the Scorchers churn out what is best described as "hard rock"—but truly *hard* rock, not the poppish stuff that gets played by compromised heavy-metal bands. These tunes start out at hurricane strength and never let up. Whipping up most of the storm is Warner Hodges, a fairly unknown guitar hero who shows more imagination per cut than most axemen demonstrate in a lifetime. On top of pouring out riffs like a rumbling

volcano spits lava, Hodges will interpolate delicate little rhythmic accents in the midst of a headlong, stinging solo. He often manages to be brutal and graceful at the same time—not an easy thing to do. He redeems *My Kingdom for a Car* with a solo that's almost heavy metal and almost Chuck Berry but all Hodges. He's been doing this sort of thing throughout the lifetime of Jason and the Scorchers, and he shows no signs here of letting up.

Not surprising for a Nashville band, many of Ringenberg's lyrics show the influence of the Old Testament and the Old West. They don't preach so much as testify and exhort. In the opening cut, *When Angels Cry*, Ringenberg blasts materialism: "Down here on the Planet Earth/The dollar sign is what you're worth." *Find You* puts a modern cowboy behind the wheel of a car traveling "through this world of woe." The songs about romance

have a special intensity, too. "Now that you're mine/Now that you're mine/I feel like a convict done doing time," he sings in *Now That You're Mine*. In *Away from You*, he will not be denied: "You can buy a Sherman tank/Lock yourself up in a bank/Still I'll find a way to get on through." Even the emotions here are seismic.

Come to think of it, maybe the souls of these guys *do* hang in the balance. If so, their music is their salvation, and our blessing.

Ron Givens

JASON AND THE SCORCHERS: *Thunder and Fire*. Jason and the Scorchers (vocals and instrumentals); other musicians. *When Angels Cry*; *Now That You're Mine*; *You Got a Way with Me*; *My Kingdom for a Car*; *Close Up the Road*; *Lights Out*; *Find You*; *Bible and a Gun*; *Six Feet Underground*; *No Turning Back*; *Away from You*. A&M SP-5264, © CS-5264, © CD-5264 (42 min).

Jason Ringenberg (center) and the Scorchers: teaching the young



PETER NASU / A&M RECORDS

BEST RECORDINGS OF THE MONTH

ABBADO'S RAVEL: THE PIANO CONCERTOS

ALITTLE more than twenty years ago Martha Argerich and Claudio Abbado made a stunning recording for Deutsche Grammophon of Ravel's G Major Piano Concerto with the Berlin Philharmonic. Their remake with the London Symphony Orchestra is a highlight—but only one of the highlights—of the latest installment in Abbado's survey of Ravel's orchestral works for the same label. The new performance may not quite match the intensity and drive of the earlier one, but it is not wanting in vivacity or wit, and it surpasses all current rivals, I think, in terms of finesse and the level of integration between soloist and orchestra.

Ravel's other piano concerto, the one in D Major for the left hand alone, is also on this disc, played not by Argerich but by Michel Béroff. Perhaps assigning the two concertos to different pianists was DG's subtle way of reminding us that this is part of Abbado's Ravel cycle, not a showcase for a soloist. In any event, it does provide for a bit of variety, and Béroff was a splendid choice. He is absolutely Argerich's peer, and he enjoys a similar level of true partnership with Abbado and the orchestra.

Since there are also three purely orchestral works on the disc, it would have been a good idea to put one or more of them between the

two concertos, but of course that is something the listener can do for himself when playing the CD. More to the point, the performances of these works are as treasurable as those of the concertos. The little fanfare Ravel composed as his contribution to the composite ballet *L'Éventail de Jeanne* is a tricky piece to bring off; Abbado avoids the twin pitfalls of cutesy condensation and grotesque inflation, and the (almost) two-minute piece is exquisite. So are the somewhat more familiar *Menuet antique* and the glorious realization of *Le Tombeau de Couperin* that round out this hugely appealing disc. The recorded sound is just fine.

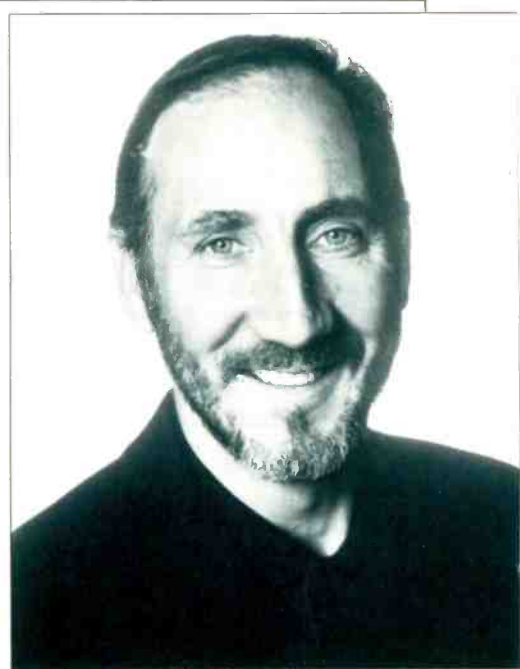
Richard Freed

RAVEL: Piano Concerto in G Major; Concerto in D Major, for the Left Hand; Fanfare for "L'Éventail de Jeanne"; Menuet antique; Le Tombeau de Couperin. Martha Argerich, Michel Béroff (piano); London Symphony Orchestra, Claudio Abbado cond. DEUTSCHE GRAMMOPHON © 423 665-2 (65 min).

"THE IRON MAN" FROM PETE TOWNSHEND

LARGELY overlooked in the controversy surrounding the Who's tour this year—are they over the hill? going through the motions? doing it for the money?—is the release of a new Pete Townshend album, which would normally be something of an event. It's not hard to figure out

Claudio Abbado: Ravel with finesse



Pete Townshend: a real musical

why. It is, you see, a concept album, and that's not exactly the most fashionable undertaking in a pop era defined by Debbie Gibson (whose *Electric Youth* is to Townshend's *My Generation* what typing is to writing). Still, Townshend's "The Iron Man" is a fascinating piece that's instantly recognizable as the work of its creator. If not as ambitious as *Tommy* or *Quadrophenia* (it is, on some level, a children's record), it more than compensates with consistency, unpretentiousness, and musical invention.

Townshend has billed "The Iron Man," based on a story by poet Ted Hughes, as a musical, rather than something highfalutin like a rock opera, and the description is both apt and a challenge. The contemporary musical, after all, is moribund, what with Andrew Lloyd Webber and other folks still recycling Puccini and Jerome Kern more than thirty years after rock-and-roll changed the world's listening habits. What Townshend has attempted is a genuine piece of music theater in an idiom that has some relation to what actual people actually listen to for pleasure.

On that level, it seems to me, he's succeeded splendidly. The songs in "The Iron Man" are clearly rock-

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BEST RECORDINGS OF THE MONTH

and-roll, but it's a grown-up rock-and-roll very much in the style of the late Who, all rippling keyboards and power chords. As far as I could tell from reading the story synopsis—it's partly an ecological fable, partly a meditation on the redemptive power of love—the songs move the narrative along as smartly as anything in *West Side Story*. Whether Townshend's creation is stageworthy remains to be seen, but on this record songs like *New Life*, *Dig* (guest starring the Who, all of them, sounding better than ever), and *Over the Top* (featuring blues great John Lee Hooker, an early Townshend influence) are genuinely thrilling.

Of course, given Broadway's dismal commercial realities, it's doubtful whether we'll ever find out if an essentially sweet little show like "The Iron Man" can shake the stage musical out of its doldrums. To be honest, I'm not sure Townshend should even try to mount the thing. The album, after all, has advantages that no stage musical will ever have—brilliant sound production (by Townshend), phenomenal band work, and honest-to-God vernacular singing (particular kudos here to Roger Daltrey and the missing-fartoo-long Nina Simone). Moreover, "The Iron Man" is still, in part, a work in progress. It doesn't yet have that One Big Tune, and the remake of Arthur Brown's psychedelically silly *Fire* is a miscalculation. Nevertheless, you've got to give Townshend credit just for trying something this risky.

In your living room, under the headphones, you can visualize "The Iron Man" for yourself, just as we've always done with the best rock-and-roll. For me, for now, that's more than enough.

Steve Simels

PETE TOWNSHEND: *The Iron Man*. Pete Townshend (vocals, guitar); John Lee Hooker, Nina Simone, Deborah Conway, Roger Daltrey, others (vocals); vocal and instrumental accompaniment. *I Won't Run Any More*; *Over the Top*; *Man Machines*; *Dig*; *A Friend Is a Friend*; *I Eat Heavy Metal*; *All Shall Be Well*; *Was There Life*; *Fast Food*; *A Fool Says*; *Fire*; *New Life/Reprise*. ATLANTIC 81996-1, © 81996-4. © 81996-2 (47 min).

RICHARD GOODE'S LATE BEETHOVEN

RICHARD GOODE began recording the Beethoven piano sonatas for Book-of-the-Month Records, but the project has since been taken over by Nonesuch, which has released a two-disc set containing the five late sonatas, beginning with Op. 101. It is downright indispensable for anyone who cares about these works, and there could be no more effective introduction for listeners who have yet to discover them. There have been pianists who have enshrouded these sonatas—and themselves with them—in various sorts of spiritual-intellectual mysticism, projecting themselves more as archpriests than as musicians. Goode is not interested in such stuff. While his brief remarks in the notes refer to the music's "density of thought and feeling" and its "mysterious radiance," there is nothing in his words or his playing to suggest that he sees himself as the anointed possessor of the sole key to the sacred chamber.

Goode's performances are utterly unselfconscious, as free of phony reverence as of externalized drama. The right pulse is found for every movement of each of the sonatas; the music moves and breathes naturally; it proceeds to logical consequences. It is never allowed to be merely "impressive" but is effectively inspiring, with a singing quality. One might say that it is allowed to define itself. As unlikely as it may seem that a listener would choose to go through all five sonatas in a single sitting, I found myself compelled to do just that, not once but several times.

These superb performances have been handsomely recorded by Max Wilcox, and the two CD's are packaged with a booklet in which Goode's own short essay is followed by a big one by Michael Steinberg, which, as always, is stimulating in its own right as well as abundantly informative. *Richard Freed*

BEETHOVEN: *Piano Sonatas: No. 28, in A Major, Op. 101; No. 29, in B-flat Major, Op. 106 ("Hammerklavier"); No. 30, in E Major, Op. 109; No. 31, in A-flat Major, Op. 110; No. 32, in C Minor, Op. 111.* Richard Goode (piano). NONESUCH ● 79211-1 two LP's, © 79211-4 two cassettes, © 79211-2 two CD's (129 min).

Richard Goode: finding the right pulse





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ANDERSON, BRUFORD, WAKEMAN, AND HOWE. Jon Anderson (vocals); Bill Bruford (drums); Rick Wakeman (keyboards); Steve Howe (guitar); vocal and instrumental accompaniment. *Themes; Fist of Fire; Brother of Mine; Birthright; The Meeting*; and four others. ARISTA AL9-8595, © AC9-8595, © ARCD-8595 (59 min).

Performance: *Yes, they're back*
Recording: *Very good*

Anderson, Bruford, Wakeman, and Howe—four-fifths of the supergroup Yes, though they can't legally use the Yes name—are to progressive rock what Crosby, Stills, Nash, and Young are to progressive folk, from the law-firm name to the period when both groups thrived (the early Seventies). Invoking past triumphs while copping late-Eighties nostalgia bucks has become the hot new trend in music, and ABWH has jumped on that bandwagon. Their hour-long new album is a magic-carpet ride through a Zen arcade of the mind, a zealous groping for that higher plane upon which knowledge, music, and the soul merge into a universal vibration of cosmic oneness.

The trouble is, singing about transcendence is not necessarily the same thing as getting there (as Jack Kerouac once cracked, "Walking on water wasn't built in a day"). Because of its naive brilliance, the Kingsmen's *Louie Louie* is far more cosmic than this album's *Order of the Universe*, which is pretentiously divided into roman-numeraled subunits with titles like *Order Theme* and *Rock Gives Courage*. Still, ABWH's rock fantasies may well find an audience among younger disciples of Gibran and Hesse and players of Dungeons and Dragons. Old-guard Yes fans, too, will make the pilgrimage, for all of the elements of that band's craft have been excavated and put on display here.

The album's palette of colors, textures, and tempos—courtly and Neoclassical in *Quartet*, festive and Brazilian in *Teakbois*, focused and commit-



JACKSON BROWNE

ACYNIC might say that Jackson Browne is stuck in the Seventies, but that would be missing the point. Browne has always made deeply personal music, at first drawing from the deep well of romance and later incorporating idealistic notions of justice and truth. Romance and idealism continue to serve him well in his latest album, "World in Motion." His blend of the personal and political has seldom been this affecting. If his music seems anachronistic to contemporary ears, that dislocation only measures how far we've fallen. But this album is not nostalgic. Its issues are pertinent, its truths timeless.

On a political level, Browne is deeply unhappy with the state of the States. He sees homelessness and inequality and militarism. He notes the sorry extent to which our problems and policies have global consequences. In *The Word Justice*, he proclaims his hope for a time "When the word will be real for everyone/And not just a word but a thing that can be done." And he renews his call to change in the title cut: "Till the world I look out at this world and see/Is the world I know this world to be/You have a volunteer in me/Now come on." Perhaps there is naiveté in Browne's outlook, but there is sincerity as well, and a deep commitment.

As a romantic troubadour, Browne has few peers. On this record he portrays a man with an aging heart, one who's weary of the emotional fast lane but not quite ready to exit. In *Enough of the Night* he sings of a woman who was voted "most likely to exceed" in high

school and has only begun to see herself as she is: "You used to laugh about the damage done/But there was no way to know/How little distance you had come/And how far you'd have to go." *Anything Can Happen* is a sad love song, laced with inevitability: "We watch the days, we make our plans/We change in ways a life demands," Browne sings. There are no guarantees with love, he says, because anything can happen. But maybe this love will endure. After all, anything can happen.

The balance between the two sides of Jackson Browne—the heart that looks outward as well as inward—is most clearly struck in the album's closing track, *Lights and Virtues*. The first two verses are a kind of toast to those things Browne cherishes, and in the second he sings, "Here's to reaching higher ground/A life of hope and purpose/Here's to strength yet to be found." But the song ends with this coda: "The pleasure of love and friendship/The courage to be alone."

Jackson Browne looks at life as a patriot, a social critic, a lover, a pal. He sings from his heart and soul. We are lucky to hear him. *Ron Givens*

JACKSON BROWNE: *World in Motion*. Jackson Browne (vocals, guitar, keyboards); other musicians. *World in Motion; Enough of the Night; Chasing You into the Light; How Long; Anything Can Happen; When the Stone Begins to Turn; The Word Justice; My Personal Revenge; I Am a Patriot; Lights and Virtues*. ELEKTRA 60830-1, © 60830-4, © 60830-2 (47 min).

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Anderson, Bruford, Wakeman, and Howe: fantasies

ted in *Birthright*—sometimes evokes the quicksilver brilliance of “Fragile.” Yes’s high-water mark. Jon Anderson’s full-force upper range has not lost its power or conviction, and Rick Wakeman’s symphonic keyboards still possess their grandeur. Bill Bruford’s encyclopedic knowledge of percussion, from straight rock to knotty global polyrhythms, is the band’s most credible element. Steve Howe, however, has lost some luster as a guitarist, probably from having taken on so much pomp-rock hack work over the years. Reservations aside, however, these former Yes men embark on musical slalom runs and prog-rock workouts that deserve a bronze medal for effort—and will probably earn them a lot of gold. *P.P.*

THE B-52’s: *Cosmic Thing*. The B-52’s (vocals and instrumentals); instrumental accompaniment. *Cosmic Thing: Dry County; Deadbeat Club; Love Shack;* and six others. REPRISÉ 25854-1, © 25854-4, © 25854-2 (47 min).

Performance: *Petering out*
Recording: *Slick*

When the B-52’s first came to our attention back in 1978, they seemed to have such a great idea for a group—Flannery O’Connor and Sebastian Venable fronting a surf band—that it was almost a shock when their music lived up to it. Funny, spooky, and danceable, their early songs were unlike anything else around in an era dominated by the rage

and industrial white noise of groups like the Clash and the Sex Pistols, and a decade later those songs have lost none of their power to haunt and amuse.

Sadly, the same will probably never be said for the group’s latest effort. The mix in “Cosmic Thing” is pretty much business as usual, the *de rigueur* goulash of kitsch futurama, hippie naïveté, and postmodern irony, and the production, courtesy of Don Was and Nile Rodgers, is eminently flattering. But the Southern Gothic element that made the B-52’s special is by now barely a memory: in fact, in songs like *Deadbeat Club* the band sounds like a generic, early-Eighties New Wave act *à la* Blondie. The group’s newfound interest in arch social commentary (*Channel Z*) hardly compensates for the lack of atmosphere. If you don’t listen too carefully, “Cosmic Thing” might seem like fun, but concentrate for a minute, and you’ll realize it’s the soundtrack for a party that’s gone on far too long. *S.S.*

BAD ENGLISH. Bad English (vocals and instrumentals). *Best of What I Got; Heaven Is a 4 Letter Word; Possession; Forget Me Not; When I See You Smile; Tough Times Don’t Last;* and seven others. EPIC OE 45083, © OET 45083, © EK 45083 (62 min).

Performance: *Very professional*
Recording: *Okay*

Bad English has the appearance of a band that was pieced together. Lead

singer John Waite has had a modestly successful solo career, lead guitarist Neal Schon is a former member of Journey, and they have joined with a keyboardist, bassist, and drummer to form a tight, professional, often enjoyable band.

“Bad English,” their debut album, sounds tailor-made for album-oriented radio. It’s constructed on a musical formula that’s reminiscent of good old hard rock. It has anthems, stompers, power ballads, real ballads—precisely the mix of tunes that commercial record companies crave. Even if the enterprise at times approaches being a test-tube Bon Jovi, Schon and Waite’s talent cannot be denied. Schon’s guitar work shows finesse and lots of technique, and he knows both when to rip up and down the frets and when to pick his notes carefully. Waite is a superb singer, with a sinuous approach to phrasing. His style is on the pop side of hard rock, which means he can be quiet and vulnerable when he wants to and makes his flat-out passion all the more powerful. If Bad English hangs together, and gets a chance to create its own particular chemistry, the results could be truly exciting. *R.G.*

MICHAEL BOLTON: *Soul Provider*. Michael Bolton (vocals); vocal and instrumental accompaniment. *Soul Provider; Georgia on My Mind; It’s Only My Heart; How Am I Supposed to Live Without You; How Can We Be Lovers;* and five others. COLUMBIA OC 45012, © OCT 45012, © CK 45012 (43 min).

Performance: *Arresting*
Recording: *Very good*

In this, his fourth solo album for Columbia, Michael Bolton demonstrates the strengths and weaknesses that have characterized his earlier efforts. Influenced by all the old soul greats—Ray Charles, Marvin Gaye, Smokey Robinson, Wilson Pickett—Bolton sings in a forced, unnatural rasp like Joe Cocker and Michael McDonald, or at least in a style that simply does not come readily to a grown-up white boy. As a result, you fear that his voice will break at any instant.

Once you get past that, however, Bolton’s four-octave range can be powerful and spellbinding, particularly in *Georgia on My Mind*, where he soars through some truly amazing flights of melody. But his bigger gift is songwriting; the songs here are all uncommonly soulful whichever co-writers Bolton’s paired with (they include Diane Warren, Doug James, Andy Goldmark, Eric Kaz, Desmond Child, and Barry Mann and Cynthia Weil). Even with eight different producers, “Soul Provider” hangs together, and at least four of the cuts—*How Am I Supposed to Live Without You, How Can We Be Lovers, You Wouldn’t Know Love, and Love Cuts Deep*—reach an affecting level of angst. Even in the ballads, which tend

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THE TIMELESS MAVIS STAPLES

THE qualities that made Mavis Staples one of the most respected soul singers of the Sixties and Seventies are as enduring as the essence of black American music. Born in the blues country of Mississippi and raised in the industrial crush of Chicago, she was steeped in a musical authenticity that found an outlet in her role as lead singer with her family gospel group, the Staples Singers. Her distinctive, heavy-throated voice and profound expressiveness became a hallmark of the Staples' sound as they fused elements of gospel with rhythm-and-blues to take their place on the cutting edge of the Sixties soul phenomenon. Her interpretive strength was even more apparent in her occasional solo recordings after the Staples signed with Stax and became stalwarts of the blues-based Memphis Sound back in the days of Booker T. and the MG's, Johnny Taylor, Sam and Dave, and the young Isaac Hayes. Authenticity of feeling was paramount back then.

Popular music has been through many changes in the intervening years, and Mavis has not recorded a solo set since 1976, but her durability is confirmed by her new record, "Time Waits for No One," on Prince's Paisley Park label. The album is a true collaboration with Prince, who served as producer and wrote most of the songs. The result points up his very real affinity for rhythm-and-blues while underscoring the close relationship between traditional and contemporary black popular music: The best of yesterday and today meet on the common ground of musical

excellence. Staples and Prince coalesce in the presence of Al Bell, who was the prime mover behind the Stax sound, and Homer Banks, a major Stax composer, who served as associate producer along with Lester Snell.

The most important factor in the recording's success, however, is Mavis Staples. She is simply magnificent as she interprets songs that range in mood from the punchy flirtatiousness of *Interesting* and the stalking, sensual insistence of *Jaguar* to the sensitive emotional entreaties of *Come Home* and *I Guess I'm Crazy*. Banks and Snell contribute two of the most melodically rich and immediately appealing songs, the ironic *20th Century Express*, whose comments on the dangerous and hectic quality of modern life are set to a lilting beat, and *The Old Songs*, whose nostalgic evocation of classic r-&-b hits and their creators, Sam Cooke and Otis Redding among others, is set to a beat resembling that of the resurrected *Stand by Me*. Also of special interest is the title song, *Time Waits for No One*, by Staples and Prince, which unites the soul feeling of the past with the production wizardry of the present. Further collaborations by this duo are definitely in order. *Phyl Garland*

MAVIS STAPLES: *Time Waits for No One*. Mavis Staples (vocals); vocal and instrumental accompaniment. *Interesting*; *20th Century Express*; *Come Home*; *Jaguar*; *Train*; *The Old Songs*; *I Guess I'm Crazy*; *Time Waits for No One*. PAISLEY PARK 25798-1, © 25798-4, © 25798-2 (39 min).

to run along a sentimental fault, this is very stylish pop. *A.N.*

CHER: *Heart of Stone*. Cher (vocals); vocal and instrumental accompaniment. *If I Could Turn Back Time*; *Just Like Jesse James*; *You Wouldn't Know Love*; *Heart of Stone*; *Still in Love With You*; *Love on a Rooftop*; and six others. GEFGEN GHS 24239. © M5G 24239. © 24239-2 (48 min).

Performance: *Monochromatic*
Recording: *Varies*

In this follow-up to "Cher," her 1987 Geffen debut, the singer/actress calls together the same team of songwriters and producers—Michael Bolton, Diane Warren, Desmond Child, and Jon Lind—that catapulted her back onto the charts following her initial foray into acting. The result is another well-crafted if somewhat histrionic album about—what else from Cher?—love. But the irony is that while she has proved herself to be a competent, wide-ranging actress, as a singer, her original forte, she displays little true expressiveness or interpretive skill.

For most of the twelve songs here, Cher is stuck on one emotion, that of the wounded, jilted lover. She steps out of that role occasionally to act as the tough heartbreaker (*Just Like Jesse James*), the passionate other woman (*Kiss to Kiss*), and, in a duet with Peter Cetera, the fated mate (*After All*). Aside from these performances, Cher largely acts as if she's never understood that sometimes less is more; she gives everything the grand gesture, the full-tilt caterwaul, especially when she's under the guidance of Desmond Child, never known for taste or finesse. She fares much better with the other producers, especially Michael Bolton, who insists on a cleaner, less cluttered instrumental approach and coaxes a more three-dimensional, soulful delivery from her, as in *You Wouldn't Know Love*.

All in all, while "Heart of Stone" is a more cohesive effort than "Cher," with a better stock of songs, next time Cher would do well to stick with one producer—someone who's more interested in making a true singer out of her than merely a pop-music diva. *A.N.*

NENEH CHERRY: *Raw Like Sushi*. Neneh Cherry (vocals); vocal and instrumental accompaniment. *Buffalo Stance*; *Manchild*; *Kisses on the Wind*; *Inna City Mamma*; *The Next Generation*; and five others. VIRGIN 91252-1, © 91252-4, © 91252-2 (46 min).

Performance: *Fresh*
Recording: *Good*

Here it is: the first successful postmodern rap album. In "Raw Like Sushi," Neneh Cherry offers a collage of performing styles, shifting quickly from passages of straight rap to stretches of traditional singing, and back again. She does this effortlessly, and the effect is

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exhilarating. The instrumental tracks are synthesized dance music at its best, a dazzling free for all of rhythms and riffs. If there are any weaknesses, they lie in the lyrics of some of the songs. Cherry often writes from the perspective of adolescence, and while most of the time her directness and naïveté are bracing, in a few places the material just seems childish. The juvenile taunting in *Heart*, for example, is irritating. Its presence in this album, however, indicates how attuned Cherry is to youth. "Raw Like Sushi" is music by and for the young. *R.G.*

NATALIE COLE: *Good to Be Back.* Natalie Cole (vocals); vocal and instrumental accompaniment. *Safe: As a Matter of Fact; Rest of the Night; Miss You Like Crazy; I Do; Good to Be Back;* and five others. EMI E1-48902, © E4-48902, © E2-48902 (47 min).

Performance: *In top form*
Recording: *Very good*

Natalie Cole's "Good to Be Back" is a celebration of the remarkable comeback she made with her previous album, "Everlasting," which was good enough to justify both its high sales and the honors it won. She is in just as sharp and self-assured a mood in the sequel,

servicing up a bunch of fine songs that are lofted even higher by her superb interpretations.

A master of phrasing, Cole plays with the beat, bringing to these songs a sense of swing that's rare to the pop genre, along with the sort of improvisations and creative alterations of melody that are the forte of the best jazz singers. Yet her tonal excursions are always true to the spirit of the music—a very rare accomplishment. Cole is at her best when she pulls out all the stops, as in *Don't Mention My Heartache* and *Safe*, but everything here is on a comparatively high level. *P.G.*

THE DOOBIE BROTHERS: *Cycles.* The Doobie Brothers (vocals and instrumentals); instrumental accompaniment. *The Doctor; One Chain (Don't Make No Prison); Take Me to the Highway; South of the Border; Time Is Here and Gone;* and five others. CAPITOL C1-90371, © C4-90371, © C2-90371 (40 min).

Performance: *Doobie-ous reunion*
Recording: *All right*

On their old records, the Doobie Brothers sounded laid-back. On this new one—their first since 1980—they simply sound enervated. Like a curlicue of

smoke lazily trailing off the end of a lit doobie (or joint, as it's more familiarly known now) and vanishing uneventfully into the surrounding environment, "Cycles" leaves only the faintest impression on the listener's consciousness. The Doobies go through the motions of re-creating their patented easy-rolling rock sound without bothering to inject any life into it.

The album opens with *The Doctor*, which was cloned from the ribs of *China Grove* and *Listen to the Music*. "Music is the doctor of my soul" is the message; on the basis of this tepid reunion album, I wouldn't rule out a class-action suit for malpractice. The two soul covers (the Four Tops' *One Chain* and the Isley Brothers' *Need a Little Taste of Love*) and the two well-intentioned antidrug songs (*Wrong Number* and *Too High a Price*) lack energy, as if they were recorded under hypnosis. The Doobies' old freewheeling, weekend-biker mentality turns up in *Take Me to the Highway* and *South of the Border*, but these hymns to the rover's life are sung in inappropriately serious voices. You're left with the feeling that you've heard it all before—and don't need to hear it again. This is turning out to be the year of the reunion, but even a die-hard nostalgist couldn't work up much



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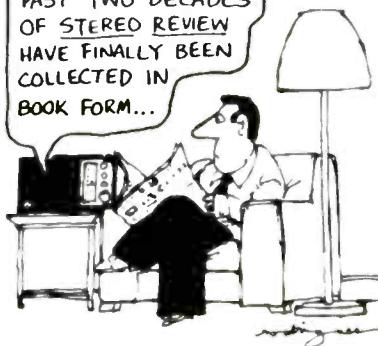
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enthusiasm for a run-through as perfunctory as "Cycles." P.P.

HOLLY DUNN: *The Blue Rose of Texas.* Holly Dunn (vocals); vocal and instrumental accompaniment. *Are You Ever Gonna Love Me; You're Still Keeping Me Up at Night; Most of All, Why; Thunder and Lightnin'; No One Takes the Train Anymore;* and five others. WARNER BROS. 25939-1, © 25939-4, © 25939-2 (29 min).

Performance: *Doing it right*
Recording: *Crisp*

Although Holly Dunn is still a relative newcomer, it's no surprise to hear Dolly Parton contributing duet vocals to a cut in "The Blue Rose of Texas." After all, Dunn, who makes her Warner Bros. debut here after three impressive albums for the now-defunct MTM label, is being talked about in Nashville as the "new" Dolly—a singer-songwriter with a string of solid, tradition-based tunes, a vulnerable, emotional quality in her vocals, a mind that thinks for itself, and an unquenchable fire in her belly. Of course, the comparison is to the old, pre-Hollywood Dolly; the current one could learn a thing or two from Dunn, who impeccably produced this album with her brother, Chris Waters.

Stocked with sinewy rhythm numbers and ballads, "The Blue Rose of Texas" presents age-old country subjects and sensibilities wrapped up in sparkling, modern arrangements, exquisitely engineered, thoughtful instrumentals, and a vocal immediacy that throbs so hard the turntable shudders and sighs. As a writer, Dunn, who wrote or co-wrote five of the songs here, is best at capturing the tensions of romance (*Are You Ever Gonna Love Me, You're Still Keeping Me Up at Night*). But far from being simply a women's album, "The Blue Rose of Texas" packs a punch for everyone—hard, fast, and definitely where it hurts. Look for Holly Dunn, who's already amassed a trunkful of new-artist awards, to start capturing the big prizes. She's got "superstar" written all over her. A.N.

EXPOSÉ: *What You Don't Know.* Exposé (vocals); vocal and instrumental accompaniment. *What You Don't Know; Stop, Listen, Look & Think; Tell Me Why; When I Looked at Him; Let Me Down Easy;* and six others. ARISTA AL-8532, © AC-8532, © ARCD-8532 (49 min).

Performance: *Platinum again*
Recording: *Good*

After a long, drawn-out legal battle, Exposé, which struck double-Platinum with *Point of No Return*, is back with "What You Don't Know," an infectious no-brainer of a dance album. The fact that each member of the trio—Ann Curless, Gioia, and Jeanette Jurado—is a strong vocalist almost makes up for the fact that the rhythm tracks are

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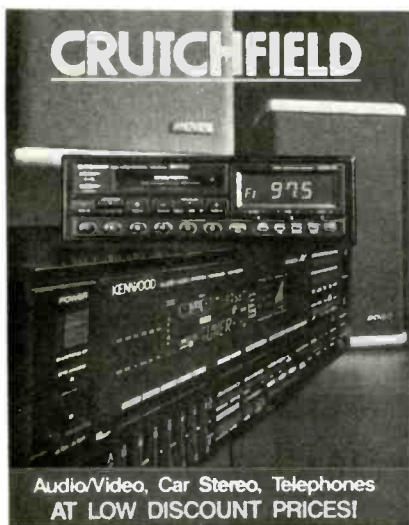
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trancelike in their repetitiveness and that the lyrics of the ballads couldn't possibly appeal to anyone whose face no longer breaks out. There's also the fact that the group was "conceived" and manufactured by two starmakers who happened to hook up with a producer, Lewis A. Martineé, who had a hand in writing nine of the eleven songs in this album.

In other words, this is one heck of a self-contained package. But so what? They'll love it in Europe, and probably on dance floors all across America. Besides, anyone who prints, "Just say No to drugs" on an album sleeve can't be all bad. Watch for Jeanette Jurado and Gioia (whose last name is apparently so long and complicated that she doesn't dare use it) to emerge as major talents on their own whenever this current trip winds down. *A.N.*

JASON AND THE SCORCHERS: *Thunder and Fire* (see Best of the Month, page 107)

LATE NITE COMIC (Brian Gari). Brian Gari, Julie Budd, Robin Kaiser, others (vocals); orchestra. ORIGINAL CAST 8843, © 8843 (58 min).

Performance: *Authoritative*
Recording: *Very good*

Less than a year after *Late Nite Comic*, about a struggling young stand-up comic and a ballerina, got clobbered by the New York critics in the fall of 1987, Brian Gari went into the recording studio with a few colleagues to give his words and music another chance—a deserving one. What's more, Gari has restored several songs that got cut during the tryout, and in the CD version he's added a piercing epilogue that sums up, more sorrowfully than bitterly, how he watched the show "fall apart at the seams . . . [and] unemployment lines replace our dreams."

As recorded here, the songs are genuinely likable. The score has a rock veneer, but at heart Gari is a romantic melodist, and that's the quality that shines through the best songs, such as *Gabrielle*, *Nothing's Changing This Love*, and *Clara's Dancing School*. A line in one song declares, "I'm through playing Harold Arlen/I'll be the next George Carlin." I hope Gari doesn't mean that literally, for he shows promise of becoming a major new songwriter. *R.H.*

IVAN LINS: *Love Dance*. Ivan Lins (vocals, keyboards); vocal and instrumental accompaniment. *Who's in Love Here: You Moved Me to This; Love Dance; Marlina; Some Morning; The Art of Survival*; and three others. RE-PRICE 25850-1, © 25850-4, © 25850-2 (42 min).

Performance: *Easy earful*
Recording: *Good*

American jazz and pop music has always mixed well with Brazilian music,

and "Love Dance," a middle-of-the-road pop album, is one such successful mixture. The Brazilian Ivan Lins wrote the music, and various writers contributed the lyrics, most of which are sung in English, a language Lins handles expertly, having grown up in Cambridge, Massachusetts. That probably also explains why his music always has an American edge to it, but it is only an edge, for the essence of this music is contemporary Brazilian. As a vocalist, Lins is a skillful communicator, and—its narrow range notwithstanding—he maneuvers his voice through these sinewy songs with prepossessing ease. "Love Dance," which takes an interesting detour when Brenda Russell joins him in *You Moved Me to This*, is one of those rare recordings that shine from start to finish. *C.A.*

LOVE AND ROCKETS. Love and Rockets (vocals and instrumentals); other musicians. **** (*Jungle Law; No Big Deal; The Purest Blue; Motorcycle; I Feel Speed; Bound for Hell; The Tear-drop Collector*; and three others. BEGGARS BANQUET/RCA 9715-1-R, © 9715-4-R, © 9715-2-R (42 min).

Performance: *A mess*
Recording: *Poor*

An appraisal of Love and Rockets would be easier if the band were consistent enough to have a style. Unfortunately, this new album meanders from synth sludge to metallic sludge to empty riffing. Occasionally something emerges from the aural murk that resembles a pop song. *Motorcycle, So Alive, and Rock and Roll Babylon* provide some relief in this otherwise dreary set, but not enough. *R.G.*

PAUL MCCARTNEY: *Flowers in the Dirt*. Paul McCartney (vocals, bass, guitar); Elvis Costello (vocals); Robbie McIntosh (guitar); Hamish Stuart (bass); Mitchell Froom (keyboards); other musicians. *My Brave Face; Rough Ride; You Want Her Too; Distractions; We Got Married; Put It There; Figure of Eight; Don't Be Careless Love*; and four others (five others on CD). CAPITOL C1-91653, © C4-91653, © C2-91653 (54 min).

Performance: *Dullsville*
Recording: *Very good*

It is a sad fact of life that you can date yourself by being disappointed—again—by a new Paul McCartney record, so I'd like to say this latest effort by him is better than it is. Unfortunately, I can't, which is all the more disappointing considering the high hopes aging Beatlemaniaics like me had for the album's several, much-hyped McCartney-Elvis Costello collaborations. Of course, nobody expects *The Decline of the West* from this particular ex-Beatle, and, to be fair, at least one of the songs he wrote with Costello (*You Want Her Too*) actually has a lyric worthy of

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McCartney's late songwriting partner, and another, the soon-to-be-ubiquitous (on the radio) *My Brave Face*, has a genuinely likable, melodic profile. Other than those two, however, there's very little here that's worthy of McCartney's pedigree.

Both *Figure of Eight*, a not-awful bit of power pop à la Squeeze, and the concluding (on LP) *Motor of Love*, in which the Cars' Greg Hawkes adds some nice keyboard touches reminiscent of Brian Wilson, linger in the memory ever so slightly. The rest—a little fake reggae (*How Many People*), a little fake "Let It Be" (*Put It There*)—is, at best, high-gloss fluff.

So why does a guy with certifiable genius credentials continue to make such boring records? You've got me, although in this case it may be attributable to an overabundance of producers, like the overrated Trevor Horn. Whatever the reason, "Flowers in the Dirt" is bound to strike most folks as yet another depressing chapter in the ongoing musical decline of a once-splendid pop figure. S.S.

MARIA MCKEE. Maria McKee (vocals); other musicians. *I've Forgotten What It Was in You (That Put the Need in Me)*; *To Miss Someone*; *Am I the*

Only One (Who's Ever Felt This Way); *Nobody's Child*; and six others (seven others on CD). GEFEN 24229-1, © 24229-4, © 24229-2 (45 min).

Performance: *Not quite there*
Recording: *Very good*

Maria McKee has a great voice. She demonstrated that as the lead singer of Lone Justice and demonstrates it again here in her first solo album. But she hasn't quite learned how best to use it, or maybe she just doesn't know herself well enough yet. In *I've Forgotten What It Was in You (That Put the Need in Me)* and *Breathe*, she lets the songs lead her through raw desperation and shattering need. These great performances are all of a piece, with the singer not separate from the song. Elsewhere, however, McKee sings beyond the emotional limits of the song, sounding a little too precious, for instance, in *Panic Beach*. It's as if she knows she's "singing" and wants to make sure we "hear" her. She doesn't trust the material enough—and, to be sure, some of the songs could be stronger.

McKee also has yet to develop her own style outside of the framework of a band. At different times she sounds a little like Linda Ronstadt, Rickie Lee Jones, Cyndi Lauper, or Joni Mitchell.

She sounds good at all these times, but not enough like Maria McKee. With more seasoning, she might just develop enough trust to wrap herself in her songs, in her own way. That would be very special. R.G.

STEVIE NICKS: *The Other Side of the Mirror*. Stevie Nicks (vocals, tambourine), vocal and instrumental accompaniment. *Rooms on Fire*; *Long Way to Go*; *Two Kinds of Love*; *Ooh My Love*; *Ghosts*; *Whole Lotta Trouble*; and six others. MODERN/ATLANTIC 91245-1, © 91245-4, © 91245-2 (56 min).

Performance: *Stevie's Bell Jar*
Recording: *Ethereal*

The problem with an artist who concentrates mainly on lyrics is that the music tends to suffer. Stevie Nicks finessed the issue here by recruiting helpmates: a good producer (Rupert Hine), a strong co-writer (Mike Campbell, one of Tom Petty's Heartbreakers), and a bankable guest artist (Bruce Hornsby). Yet all the assistance can't keep "The Other Side of the Mirror," which runs nearly an hour, from drifting in and out of focus. Certain songs simply lack a sufficiently skillful integration of words and music. Moreover, the lyrics are often rambling and incoherent—impressionistic shards from private diaries whose meanings can only be guessed at. When logical linkages elude her, Nicks resorts to ellipses: "High in my life . . . obsessive was my love/Worth it was my time . . . Oh no, you are fading out," she cryptically sings in *Long Way to Go*.

In a funny way, Nicks's somber plain-songs are at times reminiscent of the despairing, arty compositions for voice and harmonium of the late singer Nico. Nicks, it is said, records her vocals at night in a candlelit studio. The image is evocative, and it suits the flickering, wee-hours feeling of the songs, with their frequent allusions to the tremulous shadows cast by excessive living and loving. The character she writes about—and these songs are clearly autobiographical—is deeply troubled, searching for identity and grappling with demons. When you can make sense of the veiled references, her candor is intriguing. When she matches an intelligible lyric to solid musical backing—which she does in *Rooms on Fire*, *Fire Burning*, and a beautiful ballad, *Juliet*—she's a bewitching, spell-binding presence. P.P.

THE ORDINAIRES: *One*. The Ordinaires (vocals and instrumentals); instrumental accompaniment. *Brenda*; *Racing Thoughts*; *The Dance of the Coco Crispies*; *Slow Boys*; *Surplus*; and five others. BAR NONE 72615-1, © 72615-4, © 72615-2 (43 min).

Performance: *New Soho sounds*
Recording: *Good*

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TO fans of mainstream country music, Barry Tashian may be known only as Emmylou Harris's harmony singer and rhythm guitarist, a replacement for Rodney Crowell and Ricky Skaggs, who held that post before him. Like Crowell and Skaggs, however, Tashian has talents that reach far beyond a supporting position in a road band. Along with his wife, Holly, Tashian is an accomplished songwriter, and although it is doubtful that either partner would be able to forge a solo singing career (Holly sounds very much like Delia Bell), together they prove to be one of the most ingratiating duet teams in all of country music—mainstream or progressive.

Produced by Jim Rooney, the force behind some of the best albums by Nanci Griffith, John Prine, and Peter Rowan, among others, "Trust in Me" presents the Tashians' direct, unaffected vocals in a framework that is typical of Rooney's approach—mostly acoustic instrumentals, without conventional rhythm tracks, played with crisp, masterly precision and heartfelt expressiveness and mixed with enough space around the notes to allow them to shiver with emotion and ring with utmost clarity.

With Rooney's input, the seven original songs and five little-performed classics (by such writers as Gram Parsons, Tom T. Hall, and Darrell Statler) all come off as smart country duets, mindful of bluegrass, folk, and rockabilly influences. In a revival of Buddy Knox's 1957 hit, *Party Doll*, Rooney

sends in fiddler Stuart Duncan to play the sprightly break where a guitar might be expected to take the lead. As the promotional material boasts, the effect is something like the Louvin Brothers by way of Buddy Holly.

While the cover songs are particularly well chosen, the Tashians' own tunes shine like well-washed and brightly colored stones. Simple, yet dignified, they reflect both a country sensibility and a personal code of honor and conduct that symbolizes the pride of the old-style rural American. The Tashians, who sing with the ease and timing of a familial duo, will appeal to anyone who appreciates the music of Harris, Skaggs, John Starling, and the growing list of artists produced by Jim Rooney. But what is more important, they have added another name to the short list of memorable duet couples and have managed to produce an album that is both progressive and traditional at the same time—mountain music for the urban Eighties.

Alanna Nash

BARRY AND HOLLY TASHIAN: *Trust in Me.* Barry Tashian (vocals, guitar, percussion); Holly Tashian (vocals, guitar); Emmylou Harris (harmony vocals); Stuart Duncan (mandolin, fiddle, harmony vocals); other musicians. *Trust in Me: Home: Blue Eyes: Ramona: Making a Change: You're Running Wild: Party Doll: My Favorite Memory: Poor Woman's Epitaph: Look Both Ways: The Boy Who Cried Love: I Can't Dance.* NORTHEASTERN NR 5001-LP, © NR 5001-C, © NR 5001-CD (33 min).

York City's "downtown" scene that plays music that defies categorization but offers rewards to the intrepid listener. Imagine a rock chamber ensemble that's equally well versed in Charles Ives, Led Zeppelin, and "Grand Wazoo"-era Frank Zappa. Spice it up with some postbop free jazz of the Sam Rivers/Ornette Coleman school, and you're in for some adventurous listening.

Some of the songs here are designed to explore the textural and timbral possibilities of the instruments, which are arrayed in pairs of saxophones, violins, and guitars, plus one cello, one bass, and a drummer. Others find all the players chopping away at a rhythmic figure. In the next-to-last track, *Death Variation & Waltz*, they rise to a volcanic eruption of sound, like the noise collage at the end of King Crimson's *Twenty-first Century Schizoid Man*. The Zeppelin connection is driven home by the Ordinaires' cover of *Kashmir*, which is even more titanic in its intensity as an instrumental. To their credit, the Ordinaires never let art get in the way of fun; on the other hand, they're perfectly serious about their genre-bridging music. If you're tired of the mainstream—and what discerning listener wouldn't be by now?—here's a tributary worth exploring.

P.P.

JUNE POINTER: June Pointer (vocals); vocal and instrumental accompaniment. *Tight on Time (I'll Fit U In): Parlez moi d'amour (Let's Talk About Love): Why Can't We Be Together: How Long (Don't Make Me Wait):* and six others. COLUMBIA FC 44315, © FCT 44315, © CK 44315 (48 min).

Performance: *Hard-edged*
Recording: *Satisfactory*

June Pointer's new album is marked by a throbbing, insistent pulse that underscores every bodacious note she sings—or shouts: Her voice starts out on a hard edge and stays there. Some of the music's texture draws from rock, especially the punctuating guitar statements, while the beat is straight out of urban pop. What binds it all together is a funky "nowness" that never subsides. These aren't exactly songs you'll want to sing along with, but they have catchy riffs and contagious rhythms, especially *Put Your Dreams Where Your Heart Is*, which is good enough to grab the ear even when the body is still.

P.G.

PRINCE: *Batman.* Prince (vocals and instrumentals); vocal and instrumental accompaniment. *The Future: Electric Chair: The Arms of Orion: Partyman: Vicki Waiting:* and four others. WARNER BROS. 25936-1, © 25936-4, © 25936-2 (43 min).

Performance: *Boy wonder goes bats*
Recording: *Bat-tastic*

Someone had the right idea in recruiting Prince to write songs for *Batman* (as opposed to the film's background score,

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which was composed by Danny Elfman). The Minneapolis wunderkind is obsessed with the duality of good and evil that's embodied by Batman and the Joker, so he was a natural to albumize the movie. In fact, Batman and his antagonist are very close to the fictional characters of "Camille" and "Spooky Electric" conjured by Prince on his last few records to express the divisions of his own personality. In "Batman," he gets to talk through characters of someone else's devising, including Vicki

Vale, the woman who is Batman's love interest. And he took to the task like a bat to guano.

The result is an album that could pass for aural theater, with greater musical and thematic impact than would be expected from an ordinary soundtrack album. In other words, it's a great Prince album, and because he was forced to produce it quickly, it's an unusually concise and focused one, too. When he contemplates *The Future*, it's from an unnerved perspective. Without

sentimentality or false optimism, he tells it like it is: "I've seen the future, and boy it's rough," he sings with a shudder. Appropriately, he has enveloped the track in alien, futuristic sounds and riffs while keeping the backbeat steady. A steely guitar-synthesizer hook gives the stern pronouncements of *Electric Chair* a certain grim grandeur. *Batdance*, as depicted in the video, is a hellish ritual of rhythm drawn from a postmodern nightmare—sex and danger a go-go—with Jack Nicholson's Joker muttering fiendishly, "Did ya ever dance with the devil in the pale moonlight? I always ask that of all my prey."

The lighter side of Prince's chiaroscuro is evident in songs about redemption through faith in God (*Trust*) and transcendence through earthly love (*The Arms of Orion*). The latter, a cloying, romantic ballad sung with Sheena Easton, may be the most conventional thing Prince has ever recorded—and it's not hard to figure out why. Prince, who's been wanting for hits, knows it's a time for retrenchment, not risk-taking. Elsewhere, he's his old, nasty self, celebrating hot love in *Lemon Crush* and slow seduction in *Scandalous*.

"Batman," then, is an entertaining trip through Prince's multifarious world and a decade's-end plateau for the boy wonder. Will Prince continue to amaze in the Nineties as he did in the Eighties? Stay tuned, because his will be one sequel worth waiting for. P.P.

STRAY CATS: *Blast Off*. Stray Cats (vocals and instrumentals). *Blast Off*: Gina; *Everybody Needs Rock 'n' Roll*: Gene and Eddie; *Rockabilly Rules*; and five others. EMI E1-91401, © E4-91401, © E2-91401 (29 min).

Performance: *Familiar*
Recording: *Okay*

Genre bands come with a built-in problem. Sound too much like the original, and people call you derivative. Sound like anything else, and people complain that you've lost your way. In "Blast Off" the Stray Cats follow the party line and deliver basic rockabilly. Thanks to some tight ensemble work, tons of attitude, and cool haircuts, this trio enjoyed some big hits in the first half of the Eighties. After less successful individual projects, they've reformed with a flinty vengeance. *Blast Off*, *Everybody Needs Rock 'n' Roll*, and *Rockabilly World* all ooze nostalgic charm like Dippity Do, from Chuck Berry-like guitar rave-ups to clinkety rim shots. *Gene and Eddie* is so true to the spirit of those two masters, Gene Vincent and Eddie Cochran, that it recycles lines from their hits. Fans of Stray Cats as well as fans of the original stuff should enjoy this album even if it sags a few times. These guys seem truest to themselves when they emulate others. R.G.

PETE TOWNSHEND: *The Iron Man* (see Best of the Month, page 108)

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CIRCLE NO. 153 ON READER SERVICE CARD

RONNY WHYTE: *All in a Night's Work*. Ronny Whyte (vocals, piano); Harry Allen (tenor saxophone); Frank Tate (bass); Joe Cocuzzo (drums). *Devil May Care: The Folks Who Live on the Hill; I'll Remember April; So Far; Warm Goes to Warm; I Wish I Didn't Love You So; Have You Met Miss Jones?*; and six others. AUDIOPHILE © ACD-247 (51 min).

Performance: *Suave and debonair*
Recording: *Very good*

Some performers, after years of polishing a personal style, reach a plateau that satisfies their fans—and then just keep churning out more of the same for the same fans. Not Ronny Whyte. He may have several decades of albums behind him, but each new one shows how much he continues to grow and stretch himself as a singer and, especially, as a pianist.

This time there's a richer, more incisive character than ever to his easy-swinging piano stylings, as well as greater spontaneity and spice to his debonair vocal colorings and phrasing. As always, Whyte's choice of material (by Kern, Rodgers, Sondheim, Loesser, and others) is a first-rate mix of familiar standards and worthy-but-forgotten show tunes. When, for example, was the last time you heard Lane and Harburg's gorgeous *The World Is in My Arms* from 1940's *Hold On to Your Hats*? And who but Whyte would dig up Livingston and Evans's delightfully goofy title song for the 1956 horror flick *The Mole People*? Best of all is Whyte's own *Warm Goes to Warm*, easily the loveliest ballad he has yet penned.

Throughout the album's changing moods and tempos, bassist Frank Tate (a long-time Whyte collaborator), drummer Joe Cocuzzo, and saxophonist Harry Allen share in making this "night's work" a winning one. *R.H.*

COLLECTION

EVERYDAY IS A HOLLY DAY. Imitation Life: *Hey Buddy*. Shoes: *Words of Love*. Red River: *Rave On*. LMNOP: *Changing All Those Changes*. Classic Ruins: *Love's Made a Fool of You*. Ted and the Tall Tops: *Take Your Time*. Willie Alexander: *Baby, Won't You Come Out Tonight*. Paul Roland: *Peggy Sue Got Married*. The Country Rockers: *Rockin' Around with Ollie Vee*. And eight others. EMERGO/NEW ROSE © EMD 9465 (42 min).

Performance: *Mostly swell*
Recording: *Pretty good*

The idea here was simple: Get a bunch of fringe rock characters to have a go at Buddy Holly songs both famous (*Peggy Sue*) and obscure (*Baby, Won't You Come Out Tonight*). But the execution turns out to be pretty snappy overall. What's interesting is that, unlike some of the other tribute compilations out recently, the stylistic revisionism at

work in this album doesn't seem to be some sort of generation-gap insurrection. These really are tributes, not ironic declarations of artistic superiority. That shouldn't be surprising, really—Holly's songs are so sturdy and well crafted and timeless that they'll adapt to almost any musical setting—but it does give the album a certain generosity of spirit that's most becoming.

The high points for me are provided by Shoes, whose gorgeous reading of *Words of Love* is one of the finest things

they've ever done, and by former next-Dylan Elliot Murphy, whose rendering of *Everyday* toughens up the song to an astonishing degree. But almost everything else, from Chris Spedding's amusingly creepy homemade version of *It's So Easy* to the Country Rockers' letter-perfect *Rockin' Around With Ollie Vee*, is as unpretentious and fun as the Holly originals. If you're looking for an album that's simultaneously a little different and as comfortable as an old shoe, you won't go wrong with this one. *S.S.*



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The Uptown String Quartet: from Joplin to Pettiford

CONCORD FESTIVAL ALL STARS: *The 20th Concord Festival All Stars.* Harry "Sweets" Edison (trumpet); Red Holloway (tenor saxophone); Gene Harris (piano); Ray Brown (bass); Jeff Hamilton (drums). *Sophisticated Lady; I Wish I Knew; Bye Bye Blackbird; Time After Time;* and four others. CONCORD CJ-366. © CJ-366-C, © CCD-4366 (49 min).

Performance: *Mainstream*
Recording: *Excellent*

This album celebrates the twentieth anniversary of the Concord Jazz Festival, an annual event that gave birth to Concord Records, whose catalog now approaches four hundred albums. All in all, Concord, California, turns out to have been an important lifeline for jazz during a couple of decades, and the music in this set by the Concord All Stars typifies the stylistic purity and musical excellence on which the label has built its fine reputation. It's a sometimes rollicking, funky session of straight-ahead jazz, with trumpeter Harry "Sweets" Edison, tenor saxman Red Holloway, and pianist Gene Harris making meaningful statements at every opportunity. Except for bassist Ray Brown's *Blues for Sam Nassi*, the pro-

gram is a familiar one, but this group could make one feel uncommonly at home with any material. C.A.

DUKE ELLINGTON: *Four Symphonic Works.* Jimmy Heath (soprano and tenor saxophones); Sir Roland Hanna (piano); other musicians. American Composers Orchestra, Maurice Peress cond. *Black Brown and Beige Suite; Three Black Kings; New World a-Comin'; Harlem.* MUSICMASTERS © MMD 60176L (67 min).

Performance: *Grandiose*
Recording: *Excellent*

Some twenty-five years ago, Stan Kenton's orchestra made an album of music by Wagner. It was interesting and not so very inappropriate, although I'm sure it ruffled a feather or two among the composer's ardent following. I am reminded of Kenton's trek to Valhalla by this album of Duke Ellington's music performed by the American Composers Orchestra. The Kenton recordings were certainly not to be taken seriously as interpretations of Wagner, and one could argue that they weren't representative of the Kenton orchestra either. Similarly, "Four Symphonic Works by Duke Ellington" has little to do with

Ellington's music as he himself presented it. Ellington's own orchestra was, in fact, his instrument; his musicians were known to spend a lifetime in the band, giving the leader a sound around which he constructed his music. An Ellington solo, for example, was usually not written for "a clarinet" or "a trumpet," but rather for Jimmy Hamilton or Ray Nance. Other orchestras could play Ellington compositions, but when they tried to emulate his sound, the result was usually aural polyester.

Maurice Peress and the American Composers Orchestra fare no better. Their recording has an air of pretension about it, and the four pieces sound more like over-orchestrated Hollywood film music than anything else. The featured jazz soloists, Jimmy Heath and Sir Roland Hanna, all but drown in the orchestral swirl created by Peress and Luther Henderson, who together did the orchestrations. C.A.

JAMES MORRISON: *Postcards from Down Under.* James Morrison (trumpet, flugelhorn, trombone, synthesizer, baritone horn, Hammond organ); other musicians. *Wednesday Race; Freshwater Girls; From This Day; Outback; Saturday Sailing; Under the Reef; Pinnacles; Wet Monday; Sydney by Night.* ATLANTIC ● 81972-1, © 81972-4, © 81972-2 (46 min).

Performance: *Pop-ish*
Recording: *Very good*

JAMES MORRISON AND ADAM MAKOWICZ: *Swiss Encounter.* James Morrison (trumpet, flugelhorn, trombone, euphonium); Adam Makowicz (piano); Buster Williams (bass); Al Foster (drums). *'S Wonderful; My Delight; For You Irene;* and three others (four others on CD). EAST-WEST/ATLANTIC ● 91243-1, © 91243-4, © 91243-2 (57 min).

Performance: *Bop-ish*
Recording: *Very good remote*

At twenty-five, multi-instrumentalist James Morrison is already well established in his Australian homeland, and Atlantic seems determined to obtain equal status for him in this country with this pair of albums. What a disparity there is between them, however! Parts of "Postcards from Down Under" were inspired by the paintings of Australian artist Ken Done; other tracks are Morrison compositions that inspired Done. The result of this two-way inspirational flow is music that has a contemporary pop flavor, though for my taste it's a bit too reminiscent of Chuck Mangione.

Morrison is a far better trumpet player than Mangione, however, and the other album, "Swiss Encounter," lets him shine in a no-nonsense jazz set recorded at last year's Montreux Jazz

Festival. Morrison sounds like an altogether different musician here, with a quartet featuring pianist Adam Makowicz. Where he's judiciously conventional in the pop environment of "Postcards," he's venturesome at Montreux. Even Makowicz, whose playing I have never cared for, sounds good in this set. He has improved immensely since he came to the United States from Poland in 1978.

Although these releases mark Morrison's debut on records in this country, he played at the Monterey Jazz Festival in 1979, when he was sixteen, and again at the Olympic Jazz Festival in 1984. We will undoubtedly hear a lot more from this young Australian. He is an excellent brass player who should someday outgrow his current generic style and find a voice of his own. Meanwhile, his artistry is clearly evident. **C.A.**

MR. TRAM ASSOCIATES: *Getting Some Fun Out of Life*. Dick Sudhalter (vocals, cornet); Barbara Lea (vocals); Daryl Sherman (vocals, piano); Loren Schoenberg (vocals, tenor saxophone, piano). *Let's Step Out; Love Is When; Manhattan; Got the South in My Soul; More Than You Know; Bob White (What You Gonna Swing Tonight?); After All It's Spring*; and seven others. **AUDIOPHILE © DAPCD-241 (55 min).**

Performance: *Terrific*
Recording: *Clean, close up*

Cornettist Dick Sudhalter's seminal book on Bix Beiderbecke has long been out of print, but his identification with Bix remains solid among his peers. So solid, in fact, that when he teamed up with three of them for recent New York club appearances, they decided to take their name from Bix's great colleague of the late Twenties, Frankie Trumbauer—whose nickname, of course, was Tram. The name may not be an entirely accurate stylistic clue to the group's relaxed arrangements, but it is certainly apt in denoting their blithely infectious, impeccably tasteful, un gimmicky, and always mutually respectful musical camaraderie. All four of them know how to approach each song freshly and, most significant, as more than a series of chord changes. It's also obvious that the Mr. Tram Associates believed in the title of their first album—the fun is openly communicated.

All four musicians have made other albums on their own, but working together seems to bring out the best in each of them. Loren Schoenberg, playing hookey from his much-acclaimed big band, proves as warmly engaging a small-combo soloist as Sudhalter does, and the two men's occasional vocal contributions have an engaging flair (if also nothing to worry Bennett, Tormé, or Feinstein). The two women take

turns revealing just how words and music *should* be melded in some choice songs by Rodgers and Hart, Gershwin, Porter, Victor Young, and Alec Wilder, among others. The delectable Darryl Sherman plumbs more depth out of *More Than You Know* than most of us ever knew was in that Billy Rose standard. And the incomparable Barbara Lea proves once again that no one phrases a ballad more sensitively, movingly, and (where appropriate) sultrily than she does; her *A Woman's Intuition* has to be the definitive version. There's also a sparkle and wit to the Lea-Sherman duets (*Manhattan* and *Love Is When*) that you don't often hear from either jazz or pop soloists. A delightful album. **R.H.**

THE UPTOWN STRING QUARTET: *Max Roach Presents the Uptown String Quartet*. The Uptown String Quartet (instrumentals). *Extensions; Let Us Break Bread Together; Jelly Roll Rag; Tricotism; Easy Winners; Song for Winnie*; and six others. **PHILIPS 838 358-1, © 838 358-4, © 838 358-2 (58 min).**

Performance: *Stimulating*
Recording: *Excellent*

The Uptown String Quartet draws its material from "jazz, gospel, blues, and contemporary sounds," to quote from the Philips publicity release, but this all-female quartet should not be lumped into any of these categories. As this

Kirk Whalum: *appealing*



delightful debut album reveals, they have an eclectic style of their own.

Not surprisingly, the overall sound is that of any quartet of two violins, viola, and cello. The difference lies in the USQ's approach and choice of material. Jon Carisi's *Jelly Roll Rag*, for example, owes a debt to Scott Joplin and is played in a polite St. Louis ragtime style with a sudden, effective turn in the direction of New Orleans. Juxtaposed with the following track, Oscar Pettiford's *Tricotism*, it demonstrates the breadth of USQ's stylistic scope. In the venturesome hands of this quartet, the Pettiford composition becomes positively Shostakovian, and Scott Joplin's *Easy Winners* is rich fodder for the intellect. Two selections, *Let Us Break Bread Together* and *Remembering*, were arranged by bassist Bill Lee, father of filmmaker Spike Lee, and two, *Calvary* and *Chattahoochee Red*, by Cecil Bridgewater.

In case you wonder what drummer Max Roach has to do with this quartet, he produced the album. Then, too, the USQ is half of his Double Quartet, and one of its members, violist Maxine Roach, is his daughter. The other players are Diane Monroe and Lesa Terry (daughter of trumpeter Clark Terry), violins, and Eileen M. Folsom, cello. It doesn't hurt to have a musical giant present your first recording, and it won't take anything away from Mr. Roach's reputation, either, for this is an impressive debut by a group that should fit into a variety of concert environments and cater to a diversity of musical tastes. **C.A.**

KIRK WHALUM: *The Promise*. Kirk Whalum (saxophone); Bob James (keyboards); other musicians. *I Receive Your Love; N.E. Wind; The Promise; Mafoi; Don't Even Look*; and three others (four others on CD). **COLUMBIA FC 45215, © FCT 45215, © CK 45215 (51 min).**

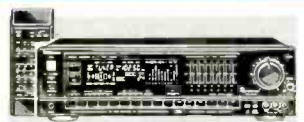
Performance: *Appealing*
Recording: *Very good*

Like many other instrumentalists now lumped into the category of jazz, saxophonist Kirk Whalum plays pop songs without words. He's a talented performer with a solid sense of musicianship and a rich, viscerally assertive tone in the tradition of a King Curtis. Whalum also favors strong melodies and delivers them with a sense of dynamics that enables him to generate excitement by building the music in layers. These qualities are apparent throughout "The Promise," his third album, which continues to show the influence of producer Bob James. While the new set has nothing as thrilling as the exquisite *Give Me Your Love* in Whalum's previous album, it is consistently appealing. **P.G.**



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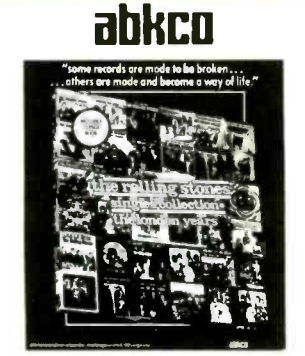
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• The Rolling Stones: Aftermath (ABK 7476) 11.99 Per CD 6.99 LP/Cass.
• The Rolling Stones: Got Live If You Want !!! (ABK 7493) 11.99 Per CD 6.99 LP/Cass.

Cassette Deck Specials



Teac V-285CHX
Stereo Cassette Deck
• Dolby B and C noise reduction • Dolby HX Pro headroom extension system • Bias fine tuning • LED peak level meter • 3-digit tape counter • Black finish
Sale Price **\$99⁹⁵** Retail \$160 (TEA V285CHX)

Teac R-445
• Auto-reverse, dolby B/C, soft-touch **\$129⁹⁵**

Teac R-455CHX
• Auto-reverse, dolby B/C & HX-Pro . . . **\$149⁹⁵**

Teac V-480
• Dolby B/C & HX-Pro, logic controls **\$149⁹⁵**

Teac V-570
• 2-motors, dolby B/C & HX-Pro . . . **\$179⁹⁵**

Teac V-670
• 3-heads, 2-motors, dolby B/C & HX-Pro **\$269⁹⁵**

Fotex X-26
• 4-track deck, 6-input channels . . . **\$449⁹⁵**

Double Cassette Decks



Technics RS-T55R
Double Quick Reverse Cassette
• High-speed dubbing • Dolby B/C & dbx • Quick auto-reverse • Series playback • 2-motors per transport • Edit search • Auto tape select with LED-indicators
Sale Price **\$269⁹⁵** Retail \$520 (TEC RST55R)

Teac W-350
• Dolby B, continuous, h/psd dubbing **\$109⁹⁵**

Technics RST-130
• Series-play, dolby B, soft-touch . . . **\$139⁹⁵**

Sharp RTW-800
• Double auto-reverse, dolby B NR **\$159⁹⁵**

Teac W-470
• Dolby B/C, continuous, logic control **\$159⁹⁵**

Teac W-450R
• Auto-reverse, dolby B/C & HX-Pro . . . **\$179⁹⁵**

Teac W-660R
• Double auto-reverse, dolby B/C . . . **\$289⁹⁵**

Home Speaker Specials



Pinnacle PN-5+
2-Way Mini Speakers
• Super sound from a small speaker • Patent pending Diaduct port increases bass response • 3/4" dome tweeter • 50 watt power handling • Designed & built in U.S.A.
Sale Price **\$149⁹⁵** Retail \$199/PR (PIN PNs +)

Technics SBL-36
• 10" 2-way bass-reflex speakers . . . Pair **\$99⁹⁵**

Technics SBL-56
• 12" 3-way bass-reflex speakers . . . Pair **\$149⁹⁵**

Technics SBL-76
• 12" 3-way bass-reflex speakers . . . Pair **\$199⁹⁵**

Celestion DL-411
• 6.5" 2-way, black or walnut . . . pair **\$249⁹⁵**

Bose AM5
• Acoustimas subwoofer & two modules **\$749⁹⁵**

OHM FI1
• Walsh speakers, walnut cabinets Pair **\$399⁹⁵**

Mini Speaker Specials



Bose RM-2 "RoomMate"
Powered Speaker System
• The small speaker with the big sound • Built-in stereo amp will accept output of personal stereo/CD players • 4.5" full range driver • Active EQ • AC powered
Sale Price **\$299⁹⁵** Retail \$310/PR (BOS RM2)

AudioSource L51
• 2-way micro speakers, black . . . pair **\$119⁹⁵**

Koss M80+
• 2-way micro speakers, walnut finish Pair **\$119⁹⁵**

Sony SRS-150
• Amplified micro speakers . . . Pair **\$129⁹⁵**

Goodmans Maxim
• 2-way speakers, black ash finish Pair **\$179⁹⁵**

Bose IO1
• 4.5" micro speakers, black . . . pair **\$179⁹⁵**

Koss JCK-5000
• Wireless 2-way speakers . . . Pair **\$189⁹⁵**



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 - The Rolling Stones: Big Hits (High Tide And Green Grass) (ABK 8001) 11.99 Per CD 6.99 LP/Cass.
 - The Rolling Stones: Their Satanic Majesties Request (ABK 8002) 11.99 Per CD 6.99 LP/Cass.
 - The Rolling Stones: Through The Past, Darkly (Big Hits Vol. 2) (ABK 8003) 11.99 Per CD 6.99 LP/Cass.
 - The Rolling Stones: Let It Be... (ABK 8004) 11.99 Per CD 6.99 LP/Cass.
 - The Rolling Stones: Get Your Ya-Ya's Out (ABK 8005) 11.99 Per CD 6.99 LP/Cass.
 - The Rolling Stones: More Hot Rocks (Big Hits & Fazed Cookies) (ABK 6267) 24.99 Per 2CD Set, 10.99 2LP/Cass.

Audio Systems



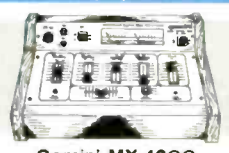
- Panasonic SC-T100 Compact Stereo System**
- Quartz synthesizer tuner, Wipacsets • 3-band EQ • Dual cassette w/high-speed editing • Series playback • Belt-drive turntable • Full range speakers
- | | | | |
|------------------------------------|----------|--------------|--------------------|
| Sale Price | \$179.95 | Retail Price | \$249 (PAN SCT100) |
| Panasonic SGX-88K | | | \$129.95 |
| • Dual-cassette, 3-band equalizer | | | |
| Panasonic SCT-300 | | | \$249.95 |
| • Remote system, dual-cassette | | | |
| Panasonic SCT-105 | | | \$349.95 |
| • Compact system with CD player | | | |
| Panasonic SCT-305 | | | \$399.95 |
| • Remote system with CD player | | | |
| Panasonic SCT-505 | | | \$479.95 |
| • Remote, CD player, dual-cassette | | | |
| Panasonic SCT-705 | | | \$499.95 |
| • Remote, 5-disc rotary CD changer | | | |

Equalizer Specials



- ADC SS-525X Computerized Graphic Equalizer**
- 12-bands per channel • Automatic room equalization for flat room response • Wireless remote • Analyzer/EQ display • Pink noise generator • Microphone • Black finish
- | | | | |
|---|----------|--------------|-------------------|
| Sale Price | \$359.95 | Retail Price | \$599 (ADC S525X) |
| Teac EQA-20 | | | \$89.95 |
| • 10-bands/ch, LED spectrum display | | | |
| Teac EQA-22 | | | \$99.95 |
| • 10-bands/ch, LED spectrum display | | | |
| ADC SS100SL | | | \$99.95 |
| • 10-bands/ch, real-time analyzer display | | | |
| ADC SS300SL | | | \$159.95 |
| • 10-bands/ch, 2-way dubbing, analyzer | | | |
| Technics SH-8058 | | | \$179.95 |
| • 7-bands/ch, 6-preset curve memories | | | |
| ADC SS325X | | | \$279.95 |
| • 12-bands/ch, real-time analyzer | | | |

DJ Equipment



- Gemini MX-4200 Disco Mixer with Echo**
- 3 phono inputs • 3-line inputs • Separate faders • 1-microphone input • Peak reading VU meters • Echo mixing • Black finish
- | | | | |
|---------------------------------------|---------|--------------|--------------------|
| Sale Price | \$99.95 | Retail Price | \$149 (GMI MX4200) |
| Gemini SEC-900 | | | \$99.95 |
| • Electronic sound effects system | | | |
| Ahus AM-100 | | | \$99.95 |
| • Mixer, 2-phono, 2-aux and cueing | | | |
| Gemini MX-6200 | | | \$184.95 |
| • Mixer, 7-band EQ, 3-phono, VU meter | | | |
| Ahus AM-300E | | | \$219.95 |
| • Mixer/Preamp w/delay, rack-mount | | | |
| Gemini MX-9200 | | | \$299.95 |
| • Mixer/Preamp, 10-band EQ, echo | | | |
- We Carry A Complete Selection of Disco Lights **CALL**

Turntable Specials



- Dual CS-5000/X3-MC Turntable with Ortofon Cartridge**
- Quartz locked belt drive system • Floating subchassis • High performance dynamic balance tonearm • Ortofon X3-MC high output moving coil cartridge
- | | | | |
|--|----------|--------------|-------------------------|
| Sale Price | \$449.95 | Retail Price | \$650 (DUA C55000/X3MC) |
| Dual CS-2110A | | | \$79.95 |
| • Semi-automatic, belt drive | | | |
| Gemini DJQ1100 | | | \$84.95 |
| • Semi-auto, belt-drive, pitch control | | | |
| Technics SLBD-22K | | | \$94.95 |
| • Semi-automatic, belt drive | | | |
| Technics SLQD33K | | | \$139.95 |
| • Automatic, quartz direct-drive | | | |
| Gemini DJQ1200 | | | \$149.95 |
| • Manual, direct-drive, quick-start | | | |
| Technics SLJ33K | | | \$179.95 |
| • Fully automatic, linear tracking | | | |

Phono Cartridges



- Shure V-15 Type V-MR Deluxe Micro Ridge Phono Cartridge**
- Quartz ridge stylus tip • Excellent trackability • Dynamic stabilizer • Side-guard stylus protection • Duo-point alignment gauge • Top rated design
- | | | | |
|-------------------------------------|----------|--------------|---------------------|
| Sale Price | \$129.95 | Retail Price | \$299 (SHU V15-VMR) |
| Audio Technica AT211EP | | | \$19.95 |
| • Bi-radial-stylus, universal | | | |
| Audio Technica AT231LP | | | \$39.95 |
| • Linear-contact, universal | | | |
| Pickering XV15/1200E | | | \$44.95 |
| • Elliptical-stylus, standard | | | |
| Shure M111HE | | | \$49.95 |
| • Hyperelliptical-stylus, universal | | | |
| Shure V15HRP | | | \$49.95 |
| • Nude hyper-ridge stylus, P-mount | | | |
| Audio Technica ATML170 | | | CALL |
| • Microline stylus, standard | | | |

Disco Phono Cartridges



- Stanton 680EL High Performance Disco Cartridge**
- Designed for heavy duty disco applications • Standard-mount • Elliptical stylus • Response: 20-18kHz • Tracking force: 2.0-to-5.0 gr. • Includes extra stylus
- | | | | |
|--|---------|--------------|-------------------|
| Sale Price | \$54.95 | Retail Price | \$109 (STA 680EL) |
| Stanton 500AL | | | \$19.95 |
| • Spherical-stylus, standard-mount | | | |
| Shure DC40 | | | \$29.95 |
| • Elliptical-stylus, standard-mount | | | |
| Audio Technica ATP2KN | | | \$29.95 |
| • Elliptical-stylus, standard | | | |
| Pickering 625DJ | | | \$32.95 |
| • Elliptical-stylus, standard-mount | | | |
| Stanton 680ELMP | | | \$69.95 |
| • Twin-pack 680 cartridges, standard mount | | | |
| Ortofon CCPRO | | | \$89.95 |
| • Spherical-stylus, standard-mount | | | |

FM Antennas



- Terk FM-9500 Indoor FM Electronic Antenna**
- Perfect for the apartment or office • Modern high tech style • 24 dB's of gain • Omnidirectional pick-up • LED display • One year warranty • Black finish
- | | | | |
|--|---------|--------------|-----------------|
| Sale Price | \$39.95 | Retail Price | \$99 (TRK 9500) |
| Terk FM2000 | | | \$19.95 |
| • Omnidirectional or directional antenna | | | |
| Terk 8500 | | | \$29.95 |
| • Electronic FM antenna, amplifies 20dB | | | |
| Parsec LS3 | | | \$29.95 |
| • Beambooster antenna, up to 18dB gain | | | |
| Parsec Stealth | | | \$39.95 |
| • Can mount behind stereo, 32dB gain | | | |
| Parsec LS4 | | | \$49.95 |
| • Omnidirectional, Schotz design | | | |
| Terk 9600 | | | \$79.95 |
| • Up to 30dB gain, (White or Grey) | | | |

Audio Accessories



- Audioquest Sorbothane Isolation Feet**
- Sorbothane has the remarkable ability to absorb and lose energy • For use under turntables or any equipment that needs to be vibration free • Supports up to 35 lbs.
- | | | | |
|--|---------|--------------|-----------------|
| Sale Price | \$34.95 | Retail Price | \$40 (ADQ FEET) |
| Tiptoes Tall | | | \$6.95 |
| • Component or speaker feet | | | |
| Parsec Scratch Out | | | \$9.95 |
| • CD cleaner & repair kit | | | |
| Sumiko Tweek | | | \$14.95 |
| • Cleaning solution for all contacts | | | |
| Audioquest CD30 | | | \$27.95 |
| • 30 compact disc rings with locator | | | |
| Audioquest Pro Lift | | | \$34.95 |
| • Auto arm lifter for manual tables | | | |
| Audioquest MAT | | | \$34.95 |
| • Sorbothane record mat for turntables | | | |

Audio Add-Ons



- dbx 120XDS Subharmonic Synthesizer**
- Creates signals between 27-55 Hz by sampling 55-110 Hz program input • Restores bottom octave commonly lost during record manufacturing & broadcasting
- | | | | |
|---|----------|--------------|--------------------|
| Sale Price | \$224.95 | Retail Price | \$299 (DBX 120XDS) |
| Audio Technica Pro 1 | | | \$34.95 |
| • Unidirectional mic, high-impedance | | | |
| Russound SDA4 | | | \$159.95 |
| • Speaker switcher, 4-pairs with volume | | | |
| dbx 1BXDS | | | \$224.95 |
| • Dynamic controller, compression | | | |
| dbx 400XG | | | \$239.95 |
| • Program route selector, 7-components | | | |
| dbx SNR1 | | | \$239.95 |
| • Noise reduction unit | | | |
| dbx 3BXDS | | | \$399.95 |
| • 3-band dynamic-range controller | | | |

Universal Remote



- Memorex CP-8 Universal Programmable Remote Control**
- Controls up to 8 wireless remote components • Built-in clock with five timers for unattended operations • Large LCD display • Infrared power booster
- | | | | |
|---------------------------------------|---------|--------------|-----------------|
| Sale Price | \$69.95 | Retail Price | \$140 (MEM CP8) |
| Memorex CP4 | | | \$49.95 |
| • Controls 4 audio/video components | | | |
| One-For-All URC 4000 | | | \$69.95 |
| • Controls 4 audio/video components | | | |
| Sony RMP700E | | | \$74.95 |
| • Programmable audio/video remote | | | |
| One-For-All URC 5000 | | | \$89.95 |
| • Controls A/V and X10 components | | | |
| JVC RMS1 | | | \$179.95 |
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 • Digital-ready • Initiated (line-ol-ight) transmitter and emitter cancel extend range • Frequency response: 20-20KHz • Variable level control for greater compatibility
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Panasonic KXT2355
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 • Beeperless answering machine . . . \$69.95

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 • Remote answer machine, talking clock \$88.88

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 • Answering machine with phone . . . \$99.95

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 • Cordless phone, speakerphone . . . \$188.88

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Casio SK100
 • 49-key mini-size keyboard, sampling \$99.95

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 • AM-stereo/FM-stereo cass, dolby B/C \$149.95

Clarion 1000A
 • 50-watts/channel amp, bridgeable \$199.95

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 • Pull-out, AM/FM/Cass, 25-wt X 4 ch. \$218.88

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 • Quick-release, super-tuner-III, cass. \$299.95

Technics CQE850
 • Pull-out, AM/FM/CD player, preamp \$499.95

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 Pronouncing Dictionary & Thesaurus
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Royal TQ-620
 Portable Datsywheel Typewriter
 • Full line correction memory with dedicated "Word Correct" key • Dual function keyboard prints international languages & special symbols • Two platen knobs • 10/12/15 pitch
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 • Portable, 7K character text memory \$169.95

Panasonic KXR440
 • Portable, 12K character text memory \$199.95

Brother AX26
 • 12K memory, 60K word dictionary \$229.95

Panasonic KXR800
 • Wordprocessing typewriter, 27K . . . \$279.95

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Panasonic KX-W1000
 Portable Word Processor
 • 50K memory • 80 X 14-line adjustable LCD • 63K word spellcheck • Thesaurus with 45K words & 500K synonyms • 353K 3.5" disk drive • Mail-merge • Spreadsheet
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 • Portable computer & word processor \$399.95

Panasonic KXW1500
 • 60K text memory, 63K word spell . . . \$499.95

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 Personal Facsimile Machine
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Sharp UX350
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TRIBUTES

by Steve Simels

ONE of the coolest things about pop-music trends, from white kids pretending to be Delta bluesmen to the current vogue for Paula Abdul clones, is that in most cases they're essentially meaningless. Despite the best efforts of critics who've read far too much Derrida or Barthes, such fads resist interpretation.

Take, for example, my own personal favorite, the medley-singles boom of the early Eighties. A defiantly meaningless phenomenon, medley singles were put together from snippets of oldies, performed either by soundalikes or the original artists and subsumed beneath a plodding disco beat. For a while, there were lots of them (the nadir was RCA's "Hooked on" series, which, alas, never included the rumored psychedelic medley called "Hooked on Drugs"), and many of them were hits. But if the medleys had any subtexts, they were impossible to discern. True, the appeal wasn't hard to understand—medley singles offered, simultaneously, nostalgia (the songs) and novelty (the unfamiliar context)—but did they really have anything to say about Life in Our Time? Like, get real, dude: If medley singles said anything at all, it was that the urge to make a fast buck is both eternal and international, hardly a news flash.

The reason to bring this up at this late date is that another interesting but equally meaningless pop trend has emerged in the past few months: the tribute album.

In strict historical terms, producer Hal Willner probably kicked off this cottage industry with his ongoing, critically acclaimed A&M series in which various rock, jazz, and pop artists perform material by Nino Rota, Thelonious Monk, Kurt Weill, and, most recently, a bunch of Disney songwriters ("Stay Awake"). But Willner's albums aren't exactly pop; they are, in fact, pretty serious, notwithstanding the presence of quasi-camp figures like Yma Sumac. Willner, for better or

worse, treats his sources with respect bordering on the worshipful, and his albums have a patina of Art that is obviously deliberate.

The tribute albums I'm referring to are considerably less rarified. Occasionally smirky tributes to Buddy Holly, the Byrds, Led Zeppelin, and Neil Young, they are performed by bands few people have ever heard of and released on fringe labels that have yet to crack a *Billboard* chart. What links them, besides the obvious, of course, is that they're all good fun, even (or especially) when they're less than reverent to the music and musicians that inspired them.

From a traditionalist standpoint, the more successful of the current batch are the ones devoted to Holly and Young. That's probably be-



The Pixies: echoes of Crazy Horse

cause Holly's songs are so sturdy and basic that they allow a fair bit of latitude for reinterpretation, while Young's are so idiosyncratic that there aren't a lot of approaches possible.

"Everyday's a Holly Day" (Emergo/New Rose, all formats) contains a gorgeous, generally faithful studio update of the sublime *Words of Love*, by Ohio cult popsters Shoes, cheek by jowl with Tav Falco's Bizarro World remake of *Peggy Sue*. And yet, somehow, the whole thing hangs together. On the other hand, the performances in "The Bridge" (Caroline, all formats) sound a lot like Young almost all the time, from college radio favorites Soul Asylum and the Pixies doing *Barstool Blues* and *Winterlong* in ways that echo Crazy Horse, Young's perennial

back-up group, all the way to avant-rockers Sonic Youth deconstructing *Computer Age* and still sounding authentic. The reason? Hippie/folkie tendencies notwithstanding, Young's songs often anticipated punk and post-punk rock in the first place.

What links these tributes to Buddy Holly, the Byrds, Led Zeppelin, and Neil Young, besides the obvious, of course, is that they're all good fun.

On the Zeppelin and Byrds fronts, things are less consistent. "Time Between," the Byrds tribute (Imaginary, LP only), goes out of its way to downplay the twelve-string jingle/jangle sound that is the Byrds' signature, and a lot of the tracks are either smugly arch (the Icicle Works' dripping-with-irony *Triad*) or out-and-out goofs (Dinosaur Jr.'s frat-punk *Feel a Whole Lot Better*). The pick hit here is a stunning acoustic *Here Without You* by Richard Thompson and friends.

Meanwhile, in "The Song Retains the Name" (Mad Rover/ILA, all formats) eleven totally obscure Northern California bands do wonderfully interesting things to a variety of smartly chosen Led Zep numbers, ranging from a fantastic Run-D.M.C.-style rap version of *Black Dog* to an Elvis/rockabilly version of *Living Loving Maid* to—gasp!—an all-acoustic version of *Rock and Roll*.

Purists will no doubt be outraged by all four of these albums, but be warned—they're just the tip of the iceberg. Before the year is out, look for similar obeisances to Jimi Hendrix, the Stones, Nick Drake, the Shadows, and even the Incredible String Band.

In the larger sense, what does all this activity mean? Fortunately, not a damn thing. And neither does yet another similar trend—the remaking of whole albums, *à la* Pussy Galore's version of the Rolling Stones' "Exile on Main Street" or Laibach's update of the Beatles' "Let It Be." But that, of course, is another column. □

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CLASSICAL MUSIC

Discs and tapes reviewed by Robert Ackart, Richard Freed, David Hall, Stoddard Lincoln, Eric Salzman, and David Patrick Stearns

BACH: Goldberg Variations (BWV 988). Scott Ross (harpsichord). EMI/ALLEGRO IMPORTS © CDC 49058.

Performance: *Thrilling*
Recording: *Okay*

Though the American-born harpsichordist Scott Ross was hardly known in this country—his monumental set of the complete Scarlatti sonatas on Erato remains unavailable here—he was a major concert artist in France, and we're fortunate that he was able to record this Bach masterwork prior to his death from AIDS this spring.

Ross takes an epic approach to the *Goldberg Variations*, performing every repeat and thus expanding the work to about a third longer than Glenn Gould's second CBS recording of it. In fact, this could be the longest *Goldberg* recording ever. "The true scope of the work," Ross wrote in the liner notes, "cannot be appreciated if it is scaled down. . . . A quick performance of that kind would be like trying to appreciate the paintings in the Great Gallery of the Louvre from a motorbike."

There's nothing leisurely about this performance, though; it seems much tighter than other, shorter *Goldberg* recordings. That's partly because Ross always keeps the music flowing. For all of his interpretive insight, his playing is straightforward and unaffected. More important, he doesn't impose any overall tempo scheme on the work, but treats the individual variations as separate entities, finding the most natural tempo for each one. As in his Scarlatti set, the result is performances that have a carved-in-stone rightness.

The only drawback is the harpsichord Ross uses. It is bright, sometimes to the point of sounding tinny, and that kind of a sound doesn't wear well in a piece as long as this. Taken in smaller doses, however, the sound does have a certain bite that enhances Ross's monumental interpretation. *D.P.S.*

BARBER: The School for Scandal, Overture, Op. 5; Adagio for Strings,

Op. 11; Essay for Orchestra, Op. 12; Second Essay, Op. 17; Third Essay, Op. 47; Medea's Dance of Vengeance, Op. 23a. Saint Louis Symphony Orchestra, Leonard Slatkin cond. EMI/ANGEL © 4DS 49463, © CDC 49463 (61 min).

Performance: *Mixed bag*
Recording: *Resplendent*

This is an interesting collection of music from all phases of Samuel Barber's career, ranging from the *School for Scandal Overture* of 1931, which was Barber's Curtis Institute graduation piece, to the *Third Essay for Orchestra* from 1978, his last completed score. The overture is still a bracing *jeu d'esprit*, with sharply contrasted impetuous and lyrical elements. The first two orchestral essays are masterly studies in multidimensional intervallic development—triadic in the First and in alternating fifths and fourths in the Second. The *Third Essay* contrasts percussive and lyrical elements, with the latter having a Straussian sensuality that is manifested even more strongly in *Medea's Dance of Vengeance*, a piece reworked in the Fifties from the climax of Barber's score for a 1946 ballet by Martha Graham.

Unfortunately, Leonard Slatkin's readings of these works are generally less than definitive. His handling of the overture is too fussy in some of the transitional episodes, and the *First Essay* lacks tension, especially in the slow introduction that leads into the fast-tempo main body. The *Second Essay* is satisfactory, but the *Third*, a considerably weaker work than its predecessors, fares better in Zubin Mehta's tauter reading with the New York Philharmonic on New World (Mehta conducted the work's première). The *Adagio for Strings*, however, gets a tender and refined performance, and *Medea's Dance* is lush and dynamic. Slatkin elic-

Fortepianist Anthony Newman



its superb playing from his orchestra throughout, and Angel has provided wonderfully full-bodied sonics. *D.H.*

BEETHOVEN: Sonata No. 8, in C Minor, Op. 13 ("Pathétique"); Sonata No. 14, in C-sharp Minor, Op. 27, No. 2 ("Moonlight"); Sonata No. 21, in C Major, Op. 53 ("Waldstein"); Sonata No. 23, in F Minor, Op. 57 ("Appassionata"). Anthony Newman (fortepiano). NEWPORT CLASSIC © NCD 60040 (73 min).

Performance: *Straightforward*
Recording: *First-rate*

Beethoven once told a violinist he was not concerned with the limitations of his "wretched fiddle," and he seems not to have been confined or restricted in what he composed for the piano by any regard for the practical limitations of the instruments available to him. Anthony Newman's performances of these four favorite sonatas on a fortepiano, though, are very persuasive, by no means mere demonstrations of the instrument (in this case a copy of an 1804 Clementi fortepiano that's agreeably smooth and warm sounding) but quite creditable realizations of these works. Newman, of course, *does* have to concern himself with his instrument's limitations, as well as with its possibilities for expressiveness, and he makes a strong case for it by focusing on the music itself as his main concern. His sane, straightforward approach favors tempos that are a bit brisk, but never at all rushed, and his performances are free of gratuitous interpretive overlay.

The sound quality is first-rate, and the annotation includes an unusually detailed structural analysis of the individual movements that corresponds to index points on the disc (as many as twelve for the first movement of the *Pathétique*). This may not appeal to everyone as the one version of these works to have, but it more than justifies itself as a back-up or alternative to modern-piano recordings of these four sonatas. *R.F.*

BEETHOVEN: Sonatas Nos. 28-32 (see *Best of the Month*, page 110)

BERLIOZ: La Mort d'Orphée; Scène héroïque; Le Cinq mai, Op. 6; L'Impériale, Op. 26. Gérard Garino (tenor); Ruud van der Meer, Lieuwe Viser (bass); Dutch Radio Choir and Symphony Orchestra, Jean Fournet cond. DENON © CO-72886 (59 min).

Performance: *Serviceable*
Recording: *Partly cloudy*

BERLIOZ: Sara la baigneuse; Le Ballet des ombres; La Mort d'Ophélie; Mab; Choeur d'ombres; Miranda; Chanson de brigands; Chanson à boire; Chant sacré;

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Performance: *Good enough*
Recording: *Excellent*

These two discs of lesser-known Berlioz choral works neatly complement each other. The Denon disc could be titled "The Heroic Berlioz" and the Harmonia Mundi "The Intimate Berlioz." Long-time Berlioz fans will not be surprised that the "intimate" disc is by far the more interesting. Though the composer could fill large musical canvasses more effectively than most, his intricate sense of detail is often what keeps you going back to his pieces when the novelty of the grandeur has worn off.

A well-rounded program of works from all periods of Berlioz's creative life, the Harmonia Mundi disc includes some real finds, such as the *Veni creator*, a modest though incredibly distilled setting dating from his last two years. *Sara la baigneuse*, which dates from the late 1830's, has a Schubertian simplicity and marvelously rich vocal writing. There are three choruses from *Lélio*, and though their effectiveness is somewhat diminished by being accompanied by piano rather than full orchestra, they're worth hearing. There are also familiar items from *Roméo et Juliette*, *L'Enfance du Christ*, and *Béatrice et Bénédicte*. While the Chorus of the Orchestre National de Lyon is not the finest ensemble to have recorded these selections, the performances, under the direction of Bernard Tetu, are generally quite serviceable and always sincere. Noel Lee is the articulate piano accompanist.

The Denon disc is more for those who must hear every note Berlioz ever wrote. *La Mort d'Orphée*, written in 1827 for the Prix de Rome competition, is the only piece that doesn't require a lot of patience. Its lushly scored monologue, anticipating the opening pages of *The Damnation of Faust*, is specifically characterized and deeply felt.

At best, the other works illustrate how early Berlioz's musical personality was formed. But mostly you hear the composer trying out techniques rather than organizing his rich, musical palette with the discipline and sense of purpose that mark his later works. *Le Cinq mai* of 1835, a eulogy to Napoleon marking his death date, is skillfully sewn together with a typically Berliozian dramatic, spacious melody, but it's not something you'd want to hear often. The one later piece is *L'Impériale*, an 1855 cantata

TOKYO GALA FOR THE MET



Levine, Battle, and Domingo in Japan

WHEN the Metropolitan Opera went to Tokyo in the spring of 1988, the company presented, in addition to operas by Offenbach, Verdi, and Mozart, a "gala concert" in the Bunka Kaikan, with Kathleen Battle and Plácido Domingo, that was broadcast live on television to the entire country. It was recorded by Deutsche Grammophon and has now been released on CD. The arias and duets are more than the abbreviated versions usually given on such occasions; a second soprano, Margaret Jane Wray, is on hand, in fact, for the opening of the scene from *Traviata*, and most of the other items are preceded by the appropriate recitatives. The last two numbers are shorter and were actually encores: Domingo smoothly assuming a baritone role in the Giovanni-Zerlina duet and, as described in the annotation, not only acting out the scene of the *Merry Widow* waltz with Battle (this one is sung in English), but actually dancing with her during the brief instrumental interlude, a gesture that accounts for the burst of applause that occurs in the middle of the piece.

Battle's delicate way with the opening

of the duet from Gounod's *Roméo et Juliette* assures us it will be the loveliest piece on the disc, and so it is, but the singing is *con amore* throughout the program, with just the right touch of humor or tenderness or whatever each selection calls for. James Levine and the orchestra provide elegant support and give virtuoso renditions of the two overtures. The sound quality, after a somewhat distant focus for the opening Verdi selections, is quite good. A lovely souvenir indeed. *Richard Freed*

KATHLEEN BATTLE AND PLACIDO DOMINGO: *Live in Tokyo 1988.*

Verdi: *La forza del destino*, *Overture. La traviata*, "Parigi, o cara." Donizetti: *Don Pasquale*, "Quel guardo il cavaliere." *Lucia di Lammermoor*, "Fra poco a me ricovero." *L'elisir d'amore*. "Esulti pur la barbara." Rossini: *L'italiana in Algeri*, *Overture*. Gounod: *Roméo et Juliette*, "Nuit d'hyménée." Mozart: *Don Giovanni*, "Là ci darem la mano." Lehár: *The Merry Widow*, "Love unspoken." Kathleen Battle (soprano); Plácido Domingo (tenor); Metropolitan Opera Orchestra, James Levine cond. DEUTSCHE GRAMMOPHON © 427 686-2 (60 min).

KIYOTANE, IMAASHI, DEUTSCHE GRAMMOPHON

first performed by 1,200 singers at the closing of the International Exposition in Paris. The Dutch Radio Choir is considerably smaller than that.

Recorded live, these performances are reasonable and fair representations and have a decent sense of French style, thanks to conductor Jean Fournet. But nobody involved seems particularly confident or inspired. *D.P.S.*

BRAHMS: Piano Sonata No. 3, in F Minor, Op. 5; Variations in D Minor; Two Rhapsodies, Op. 79. Cyprien Katsaris (piano). TELDEC © 244 186-2 (65 min).

Performance: *Mostly lackluster*
Recording: *Crisp and clear*

Cyprien Katsaris has made some enjoyable recordings of Romantic virtuoso pieces and provided fine accompaniments for Margaret Price in her Liszt song recital for Teldec. He shows surprising restraint here, however, in the last of Brahms's solo sonatas, which might have done with a little more fire in places. His approach is rather leisurely and not terribly alert, conveying precious little of the intensity and drive that mark this as a big, urgently expressive work by a twenty-year-old ablaze with fresh creative drive and fired up by his first meeting with Schumann. There is an uncertainty about momentum, too much stop-and-go.

The two slow movements of the sonata are rare examples among Brahms's instrumental works of music that might be called descriptive or "programmatic." The Variations in D Minor would not be so regarded, but this music too has a poignant, evocative quality, and Katsaris responds to it much more sympathetically. It is easily the high point of this recital, distinguished by a subtlety, a continuity of line, and an all-round poetic eloquence barely hinted at in the performance of the sonata—or in his readings of the two Op. 79 Rhapsodies, which come off as gratuitously inflated and with no acknowledgement of the shifting moods that define their character. The recording is unobtrusively crisp and clear. *R.F.*

COPLAND: Appalachian Spring, Suite; Short Symphony; Quiet City; Three Latin American Sketches. Orpheus Chamber Orchestra. DEUTSCHE GRAMMOPHON © 427 335-4, © 427 335-2 (61 min).

Performance: *Elegant*
Recording: *Topnotch*

Time was when the rhythmic complexities of Aaron Copland's *Short Symphony*, or *Symphony No. 2*, were considered beyond the powers of even the best American orchestras. Although its first performance was conducted in 1934 by Carlos Chávez in Mexico City shortly after the work was completed, it was another decade before the score received its first U.S. performance, by



Charles Mackerras: expert Dvořák

Leopold Stokowski and the NBC Symphony, and another twenty-five years before a first recording appeared, by the London Symphony under the composer's direction. While that performance still sets the standard, this new one by the conductorless Orpheus Chamber Orchestra is excellent. The first of the work's three connected movements seems a bit cautious, but the others come off beautifully.

Though completed many years later, in 1972, the *Three Latin American Sketches* are recognizably by the same hand that penned the *Short Symphony*, displaying the same bittersweet lyricism, zesty popular rhythms, and bracing harmonic astringencies. Again, the performance is first-rate. The gem of this Orpheus program, however, is the ensemble's reading of *Quiet City*, both for its intensity and poetry. Trumpeter Raymond Mase has captured most tellingly the traces of Hebraic cantillation in the melodic line.

Finally, the suite from *Appalachian Spring*, in a chamber version that represents a slight expansion in number of players from the original thirteen, receives a performance that is sensitively molded and rhythmically alert throughout. Despite plenty of competition in this repertoire, the Orpheus Chamber Orchestra's Copland CD stands out, not least for its topnotch sonics. *D.H.*

COPLAND: Quiet City (see VAUGHAN WILLIAMS)

DAVIS: Maps (Violin Concerto); Wayang No. 5 for Piano and Orchestra. Shen Guibbory (violin); Anthony Davis (piano); Kansas City Symphony Orchestra, William McGlaughlin cond. GRAMAVISION 18-8807-1, © 18-8807-4, © 18-8807-2 (51 min).

Performance: *Authoritative*
Recording: *Good*

Anthony Davis's range extends from jazz and contemporary improvisational music (he has his own group, Episteme)

to chamber, orchestral, and operatic music. In fact, I would say he is the first major composer to cross over all those lines with complete ease and skill. The first work in this album, *Maps*, is a violin concerto written for Shen Guibbory, and *Wayang No. 5* is a piano concerto commissioned by the San Francisco Symphony for the composer himself to play. Both works are well within the mainstream of symphonic modernism, but they also draw, in a very natural and unselfconscious manner, on other traditions, particularly those of black American music. Rhythmic structure plays a major role; both pieces feature a fantastic array of percussion sounds and a certain amount of improvisation. Nevertheless, anyone expecting a "hot" percussive or jazz sound from this music will be disappointed. The predominant tone is one of mystery, contemplation, ritualistic repetition—color and fantasy. Davis is a composer of imagination, and he follows no formulas in creating these larger structures, yet the music has immediate impact both in its colorful moment-to-moment invention and in its longer sustained lines. *E.S.*

DOHNÁNYI: Konzertstück in D Major, Op. 12 (see DVOŘÁK)

DUPARC: Six Mélodies (see RAVEL)

DVOŘÁK: Cello Concerto in B Minor, Op. 104. DOHNÁNYI: *Konzertstück in D Major for Cello and Orchestra, Op. 12.* Raphael Wallfisch (cello); London Symphony Orchestra, Charles Mackerras cond. CHANDOS ● ABRD 1348, © ABTD 1348, © CHAN 8662 (64 min).

Performance: *Eminently satisfying*
Recording: *Splendid*

In this reading of the Dvořák concerto, cellist Raphael Wallfisch, with the superb collaboration of Charles Mackerras and the London Symphony, hews surprisingly close to the interpretive line established in 1937 by Pablo Casals and the Czech Philharmonic under George Szell. There is passion aplenty in the outer movements and all the heart one could wish for throughout the slow movement and in the lingering epilogue of the finale, but, thank goodness, not a trace of sentimentality or bathos. Make no mistake, on the merits of this recording, Wallfisch stands with the best of today's cellists. Mackerras, long an expert in the Czech repertoire, makes a major contribution in his handling of the orchestral role. For its part, the Chandos production team, recording in the bright yet not over-reverberant acoustic of St. Jude's church, has come up with resplendent sound (listen to the horn overtones at the start of the finale).

The Dohnányi *Konzertstück*, a rarity on records, is no world-shaking masterpiece, but it is an ingratiating essay compounded about equally of elements borrowed from Brahms and Richard

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Stereo Review

Strauss. The central adagio is lush almost to a fault, and the finale is introduced by a gorgeous cadenza, which paves the way for music verging on the flamboyant but eventually subsiding to a beguilingly lyrical close. It's an enjoyable filler, but the Dvořák alone is enough to earn this recording my highest recommendation. *D.H.*

HAYDN: *Symphony No. 22, in E-flat Major ("The Philosopher"); Symphony No. 63, in C Major ("La Roxelane"); Symphony No. 80, in D Minor.* Orpheus Chamber Orchestra. DEUTSCHE GRAMMOPHON © 427 337-2 (63 min).

Performance: *Lovely*
Recording: *Very good*

HAYDN: *Symphony No. 31, in D Major ("Hornsignal"); Symphony No. 45 in F-sharp Minor ("Farewell").* Orchestra of St. Luke's, Charles Mackerras cond. TELARC © CD-80156 (68 min).

Performance: *Fine*
Recording: *Excellent*

Of the five Haydn symphonies under review here, Nos. 31, 63, and 80 appear to be coming into the domestic CD catalog for the first time, and the two recordings together make for more than two hours of delectable and fascinating listening. The performances, granted, are on modern instruments, but the conductorless Orpheus Chamber Orchestra and the Orchestra of St. Luke's are both scaled to the dimensions of Haydn's own Esterháza ensemble, and they play with finesse and sensitivity. Both, moreover, have been recorded superbly.

In the Symphony No. 22's famous opening adagio, in which the French horns and two English horns intone a solemn chorale, the Orpheus players maintain a good flow without sacrificing the sense of ceremony. The presto second movement has plenty of drive, the minuetto has just the right sense of formality, and the concluding presto is exhilaratingly virtuosic.

The Symphony No. 63, refashioned from Haydn's score for Favart's play *Les Trois sultanes*, is generally a light-hearted affair, highlighted by the beguiling major/minor double variations on a melody associated with the character Roxelane (thus the work's nickname, *La Roxelane*). The four movements of No. 80 add up to an arresting study in musical chiaroscuro, the darkly dramatic passages contrasted with near-flippant ones. All three performances are expert and idiomatic.

The so-called *Hornsignal* Symphony, No. 31, is in essence a concertante piece displaying virtually all of the first-chair instruments. It requires the utmost virtuosity and control on the part of the four French horns that hold the spotlight much of the time, particularly in the blustery beginning and end passages and in the tricky fourth variation of the finale. The Orchestra of St. Luke's

acquits itself handsomely throughout, and Charles Mackerras provides direction that is both virile and sensitive.

There is, of course, far more to the *Farewell* Symphony, No. 45, than the storied epilogue, in which the players finish their stints in turn and move off-stage one by one after snuffing their candles. The work contains some of Haydn's most innovative and daringly expressive music. The slow movement verges at times on the bleak. The minuet anticipates, in its unsettled quality, the corresponding movement of Schubert's *Tragic* Symphony and the second movement of the Sibelius Fourth, with its ending in midair. The adagio epilogue of the finale is preceded by a somber and stormy presto. There is little or no frivolity in this music—indeed, when Mendelssohn revived the work at Leipzig, he spoke of it as "curiously melancholy." Again, the Mackerras



Seiji Ozawa: refined Mahler

reading is highly satisfying. For those who don't insist on period instruments, these two discs will provide eminently rewarding listening. *D.H.*

HINDEMITH: *Concert Music for Winds* (see VAUGHAN WILLIAMS)

HUSA: *Music for Prague, 1968* (see VAUGHAN WILLIAMS)

KISSIN: *Inventions* (see PROKOFIEV)

MAHLER: *Symphony No. 4, in G Major.* Helmut Wittek (boy soprano); Concertgebouw Orchestra, Leonard Bernstein cond. DEUTSCHE GRAMMOPHON © 423 607-1, © 423 607-4, © 423 607-2 (57 min).

Performance: *Heartfelt*
Recording: *Sumptuous*

MAHLER: *Symphony No. 4, in G Major.* Kiri Te Kanawa (soprano); Bos-

ton Symphony Orchestra, Seiji Ozawa cond. PHILIPS © 422 072-4, © 422 072-2 (55 min).

Performance: *Well-mannered*
Recording: *Very good*

Except for the miscalculation, in my view, of using a boy soprano instead of a female singer in the finale, Leonard Bernstein's live recording of the beguiling Mahler Fourth, made in 1987 with the Amsterdam Concertgebouw, is among the most successful in his Mahler cycle for Deutsche Grammophon. Most important, it is free of the exaggeratedly slow tempos that marred his DG recording of the Ninth. It is a pleasure here to sense the organic flow of the opening movement and the sinister undertone of the following *Ländler*, with its demonically strident solo violin tuned up a tone. The wonderful variation-style slow movement is played with great tenderness and serenity, and special care is lavished on details of inner balance.

I have little fault to find with the finale in terms of performance, but even though the soprano solo depicts a child's vision of the delights of heaven, a child's voice does not necessarily enhance the illusion. Mahler specified a female, and to my ear the music calls for the flexibility of a woman's vocal timbre. This is the one uncomfortable blemish on what is otherwise a superbly recorded and beautifully realized reading in which the Concertgebouw strings are at their gorgeous best.

Seiji Ozawa's treatment of the work is decidedly cooler and more refined, full of lovely, crystal-clear sounds. The glorious slow-movement climax, where trumpets, timpani, and percussion herald the opening of heaven's gates, comes off in a way that very nearly matches Bruno Walter's 1945 New York Philharmonic reading. Another high point is Kiri Te Kanawa's ineffably tender rendition of the final pages. The acoustics of Boston's Symphony Hall make for a sound that is clear, bright, and well-focused, if not as rich as in the DG recording. *D.H.*

MOZART: *Clarinet Quintet in A Major (K. 581); Oboe Quartet in F Major (K. 370); Horn Quintet in E-flat Major (K. 407).* Antony Pay (basset clarinet); Stephen Hammer (oboe); Michael Thompson (horn); Academy of Ancient Music Chamber Ensemble. L'OISEAU-LYRE © 421 429 (74 min).

Performance: *Uneven*
Recording: *Satisfactory*

The outstanding performance on this disc of Mozart's chamber music featuring various wind instruments is Stephen Hammer's in the F Major Oboe Quartet. A consummate master of the Baroque oboe, he brings a lighthearted elegance and crisp articulation to this charming work. Antony Pay's reading of the A Major Clarinet Quintet, on the

other hand, is a disaster. His playing, devoid of articulation, is in the nineteenth-century tradition of seamless legato, but without the dynamic nuances associated with the legato style. The strings share the same fault, which is unnerving given their lack of vibrato. Some of the sounds they make are truly ugly, and you long for some dynamic contrasts to bring out the alternation of tension and relaxation inherent in this delicately molded score. Also, the balance is bad, with the inner voices often obscuring the first violin.

The performance of the Horn Quintet comes off rather better, and Michael Thompson's hand-stopping of the natural horn lends a timbre to the work that makes it seem fresh. S.L.

ORFF: *Carmina burana*. Edita Gruberova (soprano); John Aler (tenor); Thomas Hampson (baritone); Shinyukai Choir, Children's Chorus and Cathedral Chorus of the City of Berlin; Berlin Philharmonic Orchestra, Seiji Ozawa cond. PHILIPS © 422 363-2 (61 min).

Performance: *The best*
Recording: *Excellent*

ORFF (arr. Baker): *Carmina burana*. Lila Deis (soprano); Peter Cody (tenor); Mark Pedrotti (baritone); Jeffrey Reid Baker (synthesizers); New York Choral Society, Robert DeCormier cond. NEWPORT © NCD-60052 (61 min).

Performance: *Lame*
Recording: *Studio job*

The Seiji Ozawa recording is not just an extremely good *Carmina burana*, it is a *Carmina burana* with a difference, the difference being the presence of a Japanese choir. It is not easy to say exactly why the singing of this choir from the other side of the world is unique, but the effect is otherworldly. In literal terms, these crack Japanese singers specialize in an almost scary precision and bite. The effect is to suggest that they do, indeed, come from another time and place, and that, in a curious way, emphasizes the disturbingly medieval and strength-through-joy qualities that give this music its edge.

I don't mean to focus only on the chorus. This would be a worthwhile performance based on the solo work alone. Edita Gruberova, John Aler, and Thomas Hampson have sensationally beautiful voices, and their singing is also very moving, especially as framed by this choral environment—as if they were finding their way through a world they never made and trying to make some sense of it.

The orchestral playing too is superb. Ozawa provides intense, exciting leadership. The recording is exceptional; the engineers avoided the temptation to create medieval cathedral acoustics in favor of a more open sound. Add up all these things, and you have one of the best *Carmina buranas* ever made.

I wish I had similar good things to say about the American recording conducted by Robert DeCormier. The singing is earnest, and DeCormier is a very fine choral conductor, but the synthesizer arrangements are dumb. They have the effect of dragging everything else down. Lame. E.S.

PROKOFIEV: *Piano Concerto No. 3, in C Major, Op. 26; Visions fugitives, Op. 22, Nos. 16, 11, 17, and 10; Dance in F-sharp Minor, Op 32, No. 1.* KISSIN: *Two Inventions*. Evgeny Kissin (piano); Moscow Philharmonic Orchestra, Andrei Chistyakov cond. RCA © 60051-4-RC, © 60051-2-RC (39 min).

Performance: *Excellent*
Recording: *Very good*

It is understandable that RCA, confident of a strongly positive response to its first Evgeny Kissin release (Rachmaninoff's Second Concerto and a clutch of *Études-tableaux* taped in London in May 1988), would see what existing material might be available from the U.S.S.R.'s Melodiya while preparing new recordings of its own. The performances in this album go back as far as May 1984, when Kissin was all of twelve years old (the seldom-heard Prokofiev dance). Prokofiev's Third Piano Concerto and Kissin's own *Inventions* were recorded one year later, the *Visions fugitives* a year after that. While the new record is certainly not very generously filled, it is only slightly less striking than its predecessor—or perhaps even more so, if we do take Kissin's age into account and if we note that everything here was taped live (and all in May, perhaps at concerts marking the end of the school year).

The playing in the concerto doesn't exhibit quite the "steely" quality a more mature (thus physically stronger) pianist might produce, but it really leaves nothing to be desired in the way of either dexterity or understanding. And so it is throughout the short program. The applause (left in, perhaps, to extend the playing time) is fully merited, not by the courage shown by a child in taking on such a challenge, and not merely by impressive "pianism," but by music making that can be, and in fact demands to be, judged by the very highest standards. The *Inventions* give notice that Kissin's music making may extend into the creative realm on a serious level; while the brief pieces are not especially memorable, they show plenty of imagination, polish, and originality—despite the overt gestures toward Bach. The orchestral contribution in the concerto is more than adequate, and the sound is superior to most Melodiya studio recordings I've heard. R.F.

RAVEL: *Piano Concertos* (see Best of the Month, page 108)

ROSSINI: *Stabat mater*. Cecilia Gasdia (soprano); Margarita Zimmermann

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Riccardo Muti: coherent Scriabin

(mezzo-soprano); Chris Merritt (tenor); José García (bass); Ambrosian Singers; I Soloisti Veneti, Claudio Scimone cond. ERATO © ECD 75493 (55 min).

Performance: *Uneven*
Recording: *Excellent*

ROSSINI: *Petite messe solennelle*. Cecilia Gasdia (soprano); Bernarda Fink (contralto); Vincenzo La Scola (tenor); Francesco Ellero d'Artegna (bass); Luciano Sgrizzi, Jean-François Antonioli (piano); Philippe Corboz (harmonium); Ensemble Vocal de Lausanne, Michel Corboz cond. ERATO © ECD 75466 (72 min).

Performance: *Charmless*
Recording: *Too reverberant*

Rossini's sacred works are enjoyable for their easy melodiousness but difficult to take seriously. The *Stabat mater* contains some of the composer's finest and most imposing music, but his persona as a master of comic opera is rarely far away. In fact, the sort of suave, ultrapolished performance often given to the piece in modern recordings seems strangely inappropriate. I doubt if the music's surfaces were meant to glisten as they do in, say, Riccardo Muti's recording on Angel. Thus, I looked forward to this new recording by Claudio Scimone, for his approach to this kind of repertoire is often a bit more rough and ready.

The soloists here represent an interesting mix. Both soprano Cecilia Gasdia and mezzo Margarita Zimmermann have real temperament, and tenor Chris Merritt has a genuinely Italianate sound. Unfortunately, the bass, José García, is almost embarrassingly labored. Unfortunately, too, Scimone's interpretation doesn't have the depth of

insight one hears in Muti's, especially in the final two sections, which are easily among Rossini's finest creations. And though the Ambrosian Singers here impart some wonderful coloristic effects to the *a cappella* vocal writing, Muti's use of the vocal soloists alone, instead of a chorus, makes a much more eloquent effect.

The *Petite messe solennelle*, quite long despite its name, is a curious piece. Instead of an orchestra, it calls for two pianos and a harmonium. Its champions resent its being called a "salon mass," and it does contain some of Rossini's most forward-looking harmonies—a fact that conductor Michel Corboz does not allow the listener to miss in his new recording of it. While this is a solid, occasionally inspired recording, it has no real charm—a quality this piece *must* have—and tenor Vincenzo La Scola's aggressive vocalism is grating. The other drawback is acoustical: Blending vocalists with the piano-harmonium sound isn't easy. In the reverberant acoustic used for this recording, the harmonium sounds puny, and the pianos just sort of tinkle along. *D.P.S.*

SCHUMANN: *Symphony No. 2, in C Major, Op. 61; Symphony No. 3, in E-flat Major, Op. 97 ("Rhenish")*. Berlin Philharmonic Orchestra, James Levine cond. DEUTSCHE GRAMMOPHON © 423 625-2 (72 min).

Performance: *Exuberant*
Recording: *Superb*

SCHUMANN: *Symphony No. 3, in E-flat Major, Op. 97 ("Rhenish"); Symphony No. 4, in D Minor, Op. 120*. Cleveland Orchestra, Christoph von Dohnányi cond. LONDON © 421 643-4. © 421 643-2 (59 min).

Performance: *Taut*
Recording: *Very good*

You'd have to go all the way back to Eugene Ormandy's 1938 Philadelphia Orchestra 78's on RCA for a performance of Schumann's Second Symphony comparable in full-bodied passion to this new one by James Levine and the Berlin Philharmonic. I'm not sure that I like the very legato treatment of the first movement's introductory trumpet motto, but the main allegro section has an atmosphere charged with manic strife and the search for salvation. The double-trio scherzo is magnificently taut, and the famous adagio is both tender and ardent. The finale is, in a word, glorious. A major contributing factor is the recording locale, Berlin's Jesus-Christus-Kirche, which lends the Philharmonic strings a tonal body and luminousness comparable to the sound of the Philadelphia and Amsterdam Concertgebouw Orchestras in their greatest days. But it is the drive and passion of Levine's conducting that make this such a stirring listening experience.

The *Rhenish* Symphony performances by Levine and Christoph von

Dohnányi present the sharpest contrast. Levine takes an exuberant and open-hearted view of the score that is hard to resist, as exemplified by the grandly assertive horn call that forms the climax of the first movement. His second movement is unashamedly, rustically Teutonic, and after the central *mezzo* we get a majestic "cathedral scene" and a brilliant finale. Dohnányi's reading is reticent and small-scale in comparison, as well as more tightly controlled rhythmically. His second movement is purposefully flowing rather than dancelike, and the cathedral music is played with a certain remoteness. The finale has bite, but nowhere near the full-bodied gusto of Levine's reading.

Dohnányi achieves happier results in the Fourth Symphony, whose outer movements are better able to take the drive and tautness of the conductor's approach. And although Cleveland's Masonic Auditorium is one of the country's best recording venues, the sound achieved by the London production crew is marginally fuller and better focused in the Fourth Symphony than in the Third, which was recorded several months earlier. *D.H.*

SCRIABIN: *Symphony No. 3, in C Minor, Op. 43 ("The Divine Poem")*. **TCHAIKOVSKY: *Romeo and Juliet, Fantasy Overture*.** Philadelphia Orchestra, Riccardo Muti cond. EMI/ANGEL © CDC 49115 (69 min).

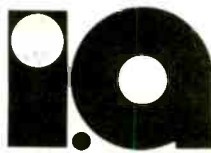
Performance: *Very good*
Recording: *Too plushy*

Alexander Scriabin's Third Symphony (1905), subtitled *The Divine Poem*, finds him about to take the final plunge into the mystic abyss from which his later works emerged. Riccardo Muti and the Philadelphia Orchestra made a convincing case for Scriabin's grandiose and sprawling First Symphony in their 1986 Angel recording, and they do no less for this one, bringing a splendid urgency to its fevered dramatic episodes and a properly lush approach to its extended lyrical passages. Most important, Muti keeps the line and structure coherent throughout the nearly fifty-minute span of the three uninterrupted movements.

My one criticism has to do with the recording's acoustic ambience. This score needs a brighter surround than that provided by Philadelphia's Memorial Hall at Fairmount Park, though its darkly burnished sonics seem to work better for the accompanying piece, Tchaikovsky's *Romeo and Juliet*. In the Scriabin, the sound seems recessed and deficient in brightness and presence—qualities essential for the realization of this music.

Interpretively, the Tchaikovsky is something of a study in extreme tempo contrasts: very slow in the lyrical sections—so much so that the love music seems lacking in passion and urgency—

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WITH the new Angel recording from Britain's Glyndebourne Festival, George Gershwin's *Porgy and Bess* completes its amazing ascent from show-biz to world-class opera. It only took a little over half a century.

Unlike its descendant *West Side Story*, created for Broadway but recently operatized, *Porgy* was intended to be an opera from the start. But no one in the operatic world would take Gershwin or the idea of an all-black opera seriously. Theater people brought *Porgy* to life in 1935 at Broadway's Alvin Theater.

The theater critics said the music was great. The music critics said it was show-biz melodrama. And while it ran 124 consecutive performances, a world record for a new opera, it was still deemed a critical failure. The music was an instant success, however, so the critics said the hit tunes were the only good

thing about the show. Since everyone "knew" that Gershwin couldn't write an opera, subsequent producers discarded much of the "operatic" music and emphasized the hit tunes. The critics then said that the piece lacked musical coherence and that the hit tunes overshadowed everything else. A sexy but mangled movie version and an understandable but mistaken negative perception of the work by many civil-rights activists in the Sixties did not help.

In fact, nobody had seen or heard the work that Gershwin wrote. There never was any doubt about his intentions. In the late Twenties, he had actually signed a contract with the Metropolitan Opera for a work on the subject of "the Dybbuk," and, if the company's administration had been more courageous, the Met could have had *Porgy*. Gershwin himself published the complete vocal

score for all the world to see, but he labeled it "folk opera," a confusing description at best.

What he wrote was clearly a full-scale grand opera complete with recitatives, arias, ensembles, choruses, and fully orchestrated scene-painting. The range and scale of his vocal writing, though inspired by Afro-American music, is fully operatic. His models, believe it or not, were *Die Meistersinger*, *Carmen*, *Boris Godounov*, and *Wozzeck*.

The revelation came in 1976 when Lorin Maazel and the Cleveland Orchestra recorded the original score—every note—with first-class singers, including Willard White as Porgy. A Houston Grand Opera production followed shortly, although, ironically, it made it to New York first in a Broadway theater and afterwards at Radio City Music Hall. *Porgy* finally reached the Met in 1985, a full half-century after its first appearance at the Alvin, and Glyndebourne produced it a year later.

Why did Gershwin look to *Meistersinger*, *Carmen*, and *Boris*? Because each of those works integrated popular national musical traditions into opera, and Gershwin wanted to do the same with American music. Such a thing was possible at that time—and it is part of Gershwin's genius to have recognized and accepted this—only with black singers. The traditions of black singing cover the full vocal range, from the low-bass or bass-baritone sound on up to gospel soprano, from a "natural" or shout sound to rough blues to a supported and projected gospel tone. And storytelling in music is a deep and natural part of black tradition. Gershwin understood that with black singers he would be able to move from intense dramatic recitatives and wide-ranging arias to spirituals and gospel shouts to blues-inflected show stoppers, all with relative ease and naturalness. In *Porgy*, only the white people speak; everybody else sings all the time.

The operatic character of *Porgy* is laid out in the new recording on the grandest scale. The chorus, the orchestra, and the overall ensemble are taken to a level of prominence and achievement that is quite new and revealing. For the first time the chorus, representing the black people of Charleston, emerges as one of the protagonists of the piece—just as the chorus in *Boris* represents the long-suffering Russian people. And the overwhelming orchestral reading under Simon Rattle's direction gives the lie to the myth of Gershwin's shortcomings in orchestral writing and creates a truly unified context for the vocal score. The style of the recording, which puts all these elements in a natural (rather than electronic) balance, also has a unifying effect very

much in line with the operatic scope of the work.

All this should not suggest that the soloists, or their hit tunes, are given short shrift. Quite the contrary. They are given the chance to push off from a rich and meaningful background, and, as powerful vocal and dramatic artists, they use that to give strength to their characterizations. Three of the male leads—Damon Evans (Sporting Life), Bruce Hubbard (Jake), and Gregg Baker (Crown)—have a strong theater or mixed theater-opera background. Willard White (Porgy) as well as Cynthia Haymon (Bess), Harolyn Blackwell (Clara), and the other leading women are more purely operatic. But all of these performers represent a generation and a tradition in which music and theater, opera/classical and pop/jazz, are hybridized and crossed over in a strong and easy manner. The result is to make Gershwin's eclecticism seem perfectly contemporary. It may be a little too much to say that this recording and these artists make us realize that Gershwin was a prophet of postmodernism, but postmodern ears certainly let us hear Gershwin differently.

Not too long ago, Gershwin's music translated only awkwardly from America to England and Europe. That has now ceased to be true. And the old issues of whether Gershwin was really a worthy classical composer, or even a jazz musician, mean nothing any more. Even the race issue, although at the core of this work, is transcended. *Porgy* is everywhere inspired by the genius of black music, and its tunes (along with others by the composer) have been jazz standards for years—with black performers as well as white. It is a work in which the lives of poor and oppressed people are shown with a mixture of realism and idealism but always with affection, respect, and the deepest humanity. These elements can be found even in the most mangled versions of *Porgy and Bess*, but the magnitude of Gershwin's achievement can only be appreciated in the full-scale work, played and sung as it was conceived. And that, to put it simply, is what we have here.

Eric Salzman

GERSHWIN: *Porgy and Bess*. Willard White (bass), Porgy; Cynthia Haymon (soprano), Bess; Harolyn Blackwell (soprano), Clara; Damon Evans (baritone), Sporting Life; Bruce Hubbard (bass-baritone), Jake; Cynthia Clarey (soprano), Serena; Marietta Simpson (mezzo-soprano), Maria; Gregg Baker (baritone), Crown; others. Glyndebourne Chorus; London Philharmonic Orchestra, Simon Rattle cond. EMI/ANGEL © 4D3S-49568 three cassettes, © CDCC-49568 three CD's (190 min).

and frenetic in the conflict episodes. For my taste, the superbly judged tempos in Mariss Janson's fiery recording on Angel make it pretty much the standard version of this work nowadays. *D.H.*

SMETANA: *Má vlast: Vyšehrad; The Moldau; From Bohemia's Fields and Groves. The Bartered Bride: Overture; Polka; Furiant; Dance of the Comedians.* Vienna Philharmonic Orchestra, James Levine cond. DEUTSCHE GRAMMOPHON © 427 340-2 (60 min).

Performance: *Resplendent*
Recording: *Sumptuous*

James Levine and the Vienna Philharmonic's much-praised complete recording of Smetana's *Má vlast* (*My Fatherland*) and the overture and dances from *The Bartered Bride*, issued toward the end of 1987, has here been edited down to a single CD containing the most popular items. The recorded performances certainly do deserve praise for their style, sonics, and orchestral playing. While some performances led by Czech conductors, notably Rafael Kubelik, may pack more of a dramatic wallop, Levine's readings provide both the requisite drama and loving attention to inner textural and coloristic detail. There is a befitting majesty to the opening of *Vyšehrad* (*The High Castle*) but also crackling drama in its development and tragic climax. The familiar *Moldau* winds its way in a most lovely fashion, with the polka episode having just the right blend of lightness and vigor. *From Bohemia's Fields and Groves* is passionate and poetic and attains a stunningly climactic close.

Even better, if possible, are the *Bartered Bride* excerpts. The overture goes at a tremendous clip, but there's also real feeling and no sense of its being a mindless show of virtuosity. Stylistically, in pacing and rhythmic accent, the dances are right on the button. The sound throughout is rich in texture and telling in impact. *D.H.*

R. STRAUSS: *Metamorphosen; Duet-Concertino for Clarinet, Bassoon, Strings, and Harp; Capriccio, Prelude* (arr. Salonen). New Stockholm Chamber Orchestra, Esa-Pekka Salonen cond. CBS © MT 44702, © MK 44702 (59 min).

Performance: *Fine*
Recording: *Excellent*

Metamorphosen, Richard Strauss's moving threnody on the passing of the old Middle European culture in World War II, here receives a performance that combines intensity and clarity. While the recording by the late Herbert von Karajan, on Deutsche Grammophon, remains the most searing in emotional impact, in part because of his use of a large string body (to which Strauss consented reluctantly), Esa-Pekka Salonen's account, using only the "twenty-three solo strings" the composer speci-

fied, has its own special claims on the listener's mind and heart. There is ample communicative power to go with the gain in textural finesse the smaller body of players makes possible.

The Duet-Concertino was Strauss's last instrumental score, and it is a delight—the first movement involving a kind of Beauty and the Beast dialogue for bassoon and clarinet. Concerning this movement, Strauss wrote to dedicatee Hugo Burghauser, long-time first-chair bassoon of the Vienna Philharmonic but then an émigré in the U.S.: "So in the end you too will turn into a prince and all live happily ever after. . . ." The slow movement is vintage lyric Strauss culminating in exploratory cadenzas for the soloists, which lead into an elaborate rondo-finale whose playing time is as long as the two preceding sections combined. The performance here is the soul of elegance, playful and serious in turn.

As a prelude to the last of his operas, *Capriccio*—in essence a lyrical debate on the pros and cons of words versus music—Strauss composed a long, spun-out string sextet in full-scale sonata form. (In stage presentations the music begins in the pit but is concluded by an ensemble on the stage.) Certainly one can understand Salonen's urge to turn this sextet into an independent work for string orchestra. It is effective in its own fashion, but the musical content is more clever than involving. The recording, made in Stockholm's Berwald Hall, is sonically faultless. *D.H.*

STRAVINSKY: *Renard* (see WALTTON)

TCHAIKOVSKY: *Grand Sonata in G Major, Op. 37; The Seasons, Op. 37b* (excerpts); *Romance in F Major, Op. 51*. Barry Douglas (piano). RCA © 7887-2-RC (59 min).

Performance: *Strong*
Recording: *Fine*

Here is something of a discovery! Tchaikovsky's *Grand Sonata* in G Major was written around the time of the Fourth Symphony and the Violin Concerto, and, although a bit pompous, it is certainly major Tchaikovsky. Barry Douglas's strong performance makes the most of its high points, but his attractive playing is not without lyricism. The *Romance* in F and the five excerpts from *The Seasons* show us a very different Tchaikovsky. He was, in his ballet music and popular piano pieces, a very sophisticated and successful salon composer, and the twelve pieces that make up *The Seasons* are among his best work in this vein. It is nice to have five of them, but I would like to hear Douglas give us the whole year's worth. *E.S.*

TCHAIKOVSKY: *Mazeppa, Cossack Dance; Coronation March; Romeo and Juliet, Fantasy Overture; Marche slave,*

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Op. 31; 1812 Overture, Op. 49. Dallas Symphony Orchestra, Eduardo Mata cond. PRO ARTE © CDD 409 (56 min).

Performance: *Mixed bag*
Recording: *Unexceptional*

The *Cossack Dance* and the *Coronation March* are the only items on this disc of "Tchaikovsky Spectaculars" that are without heavy competition from world-class orchestras and conductors, and they are the ones that get the most spirited and brilliant performances. Eduardo Mata's reading of *Romeo and Juliet* is distinguished by lovely woodwind playing in the coda, but it is lugubrious in the opening section and somewhat lacking in snap and tension elsewhere. The *Marche slave* also suffers from an excessively funereal pace at the start.

The point of this recording was no doubt to produce a digitally recorded version of the *1812 Overture* that would outclass Telarc's 1978 superblockbuster by Erich Kunzel and the Cincinnati Symphony (record reviewers were even supplied with the Telarc CD for comparison). Kunzel's disc also includes the *Cossack Dance*, but the only other piece is *Capriccio italien*, so Pro Arte is one-up on Telarc in that the new disc contains twenty-one more minutes of music. On the other hand, the Cincinnati Music Hall afforded Kunzel a sharper focus and more convincing acoustic perspective than the Cliff Temple Baptist Church in Dallas has given Mata's recording.

Neither *1812* performance is in a class musically with that of the Philadelphia Orchestra under Riccardo Muti on Angel, but the sound effects in both are highly effective, particularly the use of outdoor carillons for the massive bell sequences. The digitally recorded cannon shots provide the ultimate test for playback equipment, which is fine if your system can take it. Many of today's best amplifiers and speakers have protective circuitry that cuts out the sound under conditions of transient overload, so I suggest that before playing either disc all the way through, you begin with the last part of the *1812* and adjust the volume to prevent cut-outs during the cannon shots. *D.H.*

TCHAIKOVSKY: *Romeo and Juliet, Fantasy Overture* (see SCRIBAN)

VAUGHAN WILLIAMS: *Toccata marziale; Variations for Wind Band.* HINDEMITH: *Concert Music for Wind Band, Op. 41.* COPLAND: *Quiet City.* HUSA: *Music for Prague, 1968.* Wynton Marsalis (trumpet); Phillip Koch (English horn); Eastman Wind Ensemble, Donald Husberger cond. CBS © MT 44916, © MK 44916 (67 min).

Performance: *Good*
Recording: *Cramped*

The Vaughan Williams pieces that introduce this program by the famous

Eastman Wind Ensemble are jolly and popular in that fine old English band tradition. At the other extreme is the mysterious, dramatic, threatening work by Karel Husa, a Czech-born American composer, who refers in his title to the Russian invasion of his native country in 1968. In between is a wonderful example of Hindemithian *Gebrauchsmusik* (the German term translates literally as "music for use" but really means "have a good time performing it," and the Eastman winds do) and Copland's beautiful *Quiet City*, featuring gorgeous solo work by Wynton Marsalis and Phillip Koch. One minus, however, is the recording itself, which lacks spaciousness. After all, what you want most from the recorded sound of a band is great tone and a sense of space. *E.S.*

WALTON: *Façade; Façade 2.* Peggy Ashcroft, Jeremy Irons (reciters); London Sinfonietta. Riccardo Chailly cond. **STRAVINSKY: *Renard.*** Philip Langridge, Neil Jenkins (tenor); Derek Hammond Stroud, Robert Lloyd (bass); Christopher Bradley (cimbalo); London Sinfonietta, Riccardo Chailly cond. LONDON © 421 717-2 (65 min).

Performance: *Enlivening*
Recording: *Bright*

Façade is, to say the least, a curious work, and it had a chaotic early life. Walton originally composed his settings for recitations of Edith Sitwell's poems in 1921 (when he was only nineteen years old), but between the time of the first performance, a private one in January 1922, and the first publication, in 1951, he revised, rearranged, and replaced portions of it on several occasions. In the meantime, much of the music had become familiar in the two orchestral suites he arranged from the score and through Frederick Ashton's ballet. In 1977, for a celebration of Walton's seventy-fifth birthday, eight of the original pieces he had dropped from the score before the public premiere were given a belated premiere under the title *Façade Revived*; Walton polished these up a bit and allowed them to be published in 1979 as *Façade 2*. They were promptly recorded, together with the bigger "basic" *Façade*, by Stewart Bedford, with Cathy Berberian and Robert Tear as the reciters, and issued here on a Peters LP. That performance seemed to find a Weillish character in the work—a sort of *Dreigroschenoper* in pre-echo, an effect stressed by the recording, which placed the reciters among the instruments rather than out front as in this new London recording.

Echoes or pre-echoes of Weill or anyone else but Walton himself will be less likely to suggest themselves in the brighter-sounding new version, however. Peggy Ashcroft, who recorded *Façade* with Walton himself nearly twenty years ago, and Jeremy Irons are out front here (their recitations, in fact,

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MATT HAIMOVITZ COMES OF AGE

THE Israeli-born cellist Matt Haimovitz made so strong an impression at the age of fourteen that he was given the loan of the Gofriller instrument that had belonged to Pablo Casals. That gesture is amply justified by the handsome, mature accounts of three "basic repertoire" works for the cello in Haimovitz's Deutsche Grammophon debut recording, taped in June of last year, before he was quite eighteen, with the Chicago Symphony under James Levine. His performances of the Lalo Cello Concerto and the Saint-Saëns A Minor Concerto are stylish, fluid, and assured, and the third work, Bruch's paraphrase of the *Yom Kippur* chant *Kol Nidrei*, is perhaps even more striking. I don't think I have ever heard quite so evocatively lovely a performance of *Kol Nidrei*, recorded or otherwise. It all seems to be coming "from within," with an unforced, uncontrived expressiveness governed by an innate sense of propriety—one might as well say "elegance." These characteristics, of course, also suit the two concertos down

to the ground, with their dramatic contrasts between declamatory gestures and weightless delicacy.

Throughout all three works there is not only an abundance of polish, flair, and infectious momentum, but an all too rare sense of true, warmhearted partnership, of the solo and orchestral performances building upon each other in a way that is at once comfortable and stimulating. Everything here suggests, too, that the young Haimovitz is a musician with a sense of responsibility and a capacity for growth. In any event, it is a more than impressive debut disc. Haimovitz and Levine obviously enjoyed their collaboration, and DG has recorded them superbly and provided an urbane and informative essay by Hugh Macdonald. *Richard Freed*

LALO: Cello Concerto in D Minor. BRUCH: Kol Nidrei, Op. 47. SAINT-SAËNS: Cello Concerto No. 1, in A Minor, Op. 33. Matt Haimovitz (cello); Chicago Symphony Orchestra, James Levine cond. DEUTSCHE GRAMMOPHON © 427 323-2 (60 min.).

appear to have been dubbed in), and not always to their advantage. There are occasional miscalculations, and Dame Peggy now sounds somewhat less assured than Cathy Berberian—though this amounts to nothing more, perhaps, than a matter of the singer's superior breath control in some of the more taxing lines. But these are minor flaws. Riccardo Chailly gives us an enlivening, expertly characterized account of these unique pieces.

Surprisingly, Chailly strikes me as a bit more persuasive in the thoroughly English *Façade* than in the more "cosmopolitan" *Renard*. Charles Dutoit's conducting of the Stravinsky work was somewhat more sympathetic, and his singers showed more conviction, too, in his 1973 recording, transferred to an Erato CD together with his similarly persuasive performance of *L'Histoire du soldat*. But since that disc is no longer in the catalog, we should be grateful to have a work as charming as *Renard* represented by a performance as well delineated and entertaining in its own right as Chailly's certainly is. All in all, a very welcome release. *R.F.*

COLLECTION

ANTHONY NEWMAN: Romantic Masterworks for Organ. Widor: *Allegro, from Organ Symphony No. 6 in G Minor; Toccata, from Organ Symphony No. 5 in F Minor. Gigout: Toccata in B Minor. Mulet: Carillon on "Tu es petra." Reubke: Sonata on Psalm 94. Liszt: Ave Maria; Andante; Fantasia and Fugue on "Ad nos, ad salutarem undam." Vierne: Westminster Carillon. Anthony Newman (organ). NEWPORT CLASSIC 60050 (75 min).*

Performance: *Brilliant*
Recording: *Excellent*

Anthony Newman's talents are many: composer, harpsichordist, pianist, and designer of and performer on the organ. The latter is, in my opinion, his strongest talent, and it is displayed in this carefully chosen and brilliantly executed anthology of Romantic organ music. Playing the Rieger organ at the Episcopal Church of the Holy Trinity in New York City (designed by Newman, built by Rieger Orgelbau of Schwarzach, Austria, and installed in 1987), the organist reveals an impressive technique, firm command of the instrument, and a wide range of expression. One has only to compare the intimacy of Liszt's *Ave Maria* with the driving force of the Widor movements to appreciate Newman's combination of technical ability and musicianship. In the Reubke sonata, moreover, and especially in the Liszt *Fantasia and Fugue*, he demonstrates his understanding of large musical structures and keen sense of pacing appropriate registration. His performance here is enhanced by a recording that beautifully captures the sound of the Trinity Church instrument. *S.L.*

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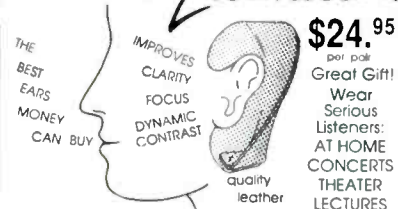
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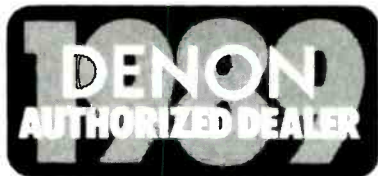
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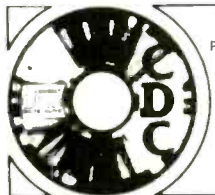
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CDX820	369	PRODIGYIV	249	MX75		3530	179	761	189
CDX920	589	PRODIGYV	249	MX95		3531	159	767	99
CDX1120	989	PRODIGYVI	249	MX115		3532	399	C700	159
		PRODIGYVII	249	MX135		3533	Call	C793	259
		PRODIGYVIII	249	MX155		3534	549		
		PRODIGYIX	249	MX175		3535	389		
		PRODIGYX	249	MX195		3536			
		PRODIGYXI	249	MX215		3537			
		PRODIGYXII	249	MX235		3538			
		PRODIGYXIII	249	MX255		3539			
		PRODIGYXIV	249	MX275		3540			
		PRODIGYXV	249	MX295		3541			
		PRODIGYXVI	249	MX315		3542			
		PRODIGYXVII	249	MX335		3543			
		PRODIGYXVIII	249	MX355		3544			
		PRODIGYXIX	249	MX375		3545			
		PRODIGYXX	249	MX395		3546			
		PRODIGYXXI	249	MX415		3547			
		PRODIGYXXII	249	MX435		3548			
		PRODIGYXXIII	249	MX455		3549			
		PRODIGYXXIV	249	MX475		3550			
		PRODIGYXXV	249	MX495		3551			
		PRODIGYXXVI	249	MX515		3552			
		PRODIGYXXVII	249	MX535		3553			
		PRODIGYXXVIII	249	MX555		3554			
		PRODIGYXXIX	249	MX575		3555			
		PRODIGYXXX	249	MX595		3556			
		PRODIGYXXXI	249	MX615		3557			
		PRODIGYXXXII	249	MX635		3558			
		PRODIGYXXXIII	249	MX655		3559			
		PRODIGYXXXIV	249	MX675		3560			
		PRODIGYXXXV	249	MX695		3561			
		PRODIGYXXXVI	249	MX715		3562			
		PRODIGYXXXVII	249	MX735		3563			
		PRODIGYXXXVIII	249	MX755		3564			
		PRODIGYXXXIX	249	MX775		3565			
		PRODIGYXXXX	249	MX795		3566			
		PRODIGYXXXXI	249	MX815		3567			
		PRODIGYXXXXII	249	MX835		3568			
		PRODIGYXXXXIII	249	MX855		3569			
		PRODIGYXXXXIV	249	MX875		3570			
		PRODIGYXXXXV	249	MX895		3571			
		PRODIGYXXXXVI	249	MX915		3572			
		PRODIGYXXXXVII	249	MX935		3573			
		PRODIGYXXXXVIII	249	MX955		3574			
		PRODIGYXXXXIX	249	MX975		3575			
		PRODIGYXXXXX	249	MX995		3576			
		PRODIGYXXXXXI	249	MX1015		3577			
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		PRODIGYXXXXXIII	249	MX1055		3579			
		PRODIGYXXXXXIV	249	MX1075		3580			
		PRODIGYXXXXXV	249	MX1095		3581			
		PRODIGYXXXXXVI	249	MX1115		3582			
		PRODIGYXXXXXVII	249	MX1135		3583			
		PRODIGYXXXXXVIII	249	MX1155		3584			
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		PRODIGYXXXXXXIII	249	MX1255		3589			
		PRODIGYXXXXXXIV	249	MX1275		3590			
		PRODIGYXXXXXXV	249	MX1295		3591			
		PRODIGYXXXXXXVI	249	MX1315		3592			
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		PRODIGYXXXXXXVIII	249	MX1355		3594			
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		PRODIGYXXXXXXXV	249	MX1695		3611			
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		PRODIGYXXXXXXXVIII	249	MX1755		3614			
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		PRODIGYXXXXXXXX	249	MX1795		3616			
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		PRODIGYXXXXXXXIV	249	MX2875		3670			
		PRODIGYXXXXXXXV	249	MX2895		3671			
		PRODIGYXXXXXXXVI	249	MX2915		3672			

by *Christie Barter*
& *Ron Givens*

AFTER touring around the world for thirteen long months in 1987 and 1988, Tina Turner was understandably exhausted. She announced that she'd never go on the road again. Fortunately, she never said anything about staying out of the studio. Now she's released her first studio album since "Break Every Rule" in 1986. The new album, "Foreign Affair," on Capitol, returns Turner to her funky roots while sustaining the high-energy rock sound that propelled her megahit, "Private Dancer."

For the first time, Turner herself co-produced and co-arranged many of the tracks in the album. Tony Joe White, who wrote the hits *Polk Salad Annie* and *Rainy Night in Georgia*, wrote and helped to produce four of the songs, and the first single, *The Best*, was written by Holly Knight and Mike Chapman. Guitarist **Mark Knopfler** and saxophonist **Edgar Winter** are two of the guest musicians. □



Turner: back to roots

AUSTRALIAN jazzman **James Morrison** is having quite a year. The trombonist-trumpeter released two recordings in the United States in only a couple of months' time. "Postcards from Down Under," on Atlantic, is a fusion suite of musical sketches inspired by the paintings of Australian artist Ken Done. "Swiss Encounter," on East/West Records, an Atlantic subsidiary, captures Morrison in a mainstream session at the 1988

Montreux Jazz Festival with pianist **Adam Makowicz** and a rhythm section consisting of bassist **Buster Williams** and drummer **Al Foster**.

With barely a chance to catch his breath, Morrison is now embarking on a worldwide tour with the Philip Morris Superband, led by pianist **Gene Harris** and including such legendary names as bassist **Ray Brown**, guitarist **Herb Ellis**, reedmen

James Moody and **Frank Wess**, trombonist **Urbie Green**, and trumpeter **Harry "Sweets" Edison**. Starting in New York City this fall, the seventeen-piece band will travel to nearly twenty countries, including Morrison's native land. □

WHAT the folks in Fort Worth call "the western hemisphere's most important music competition," the Van Cliburn International Piano Competition, is the focus of a ninety-minute television special to be carried by the PBS network on October 18. Peter Rosen, the Emmy-winning producer of the program, has said that his goal was to make a "program about music and musicians, not just a close-up, behind-the-scenes look."

In addition to coverage of this year's semi-final and fi-

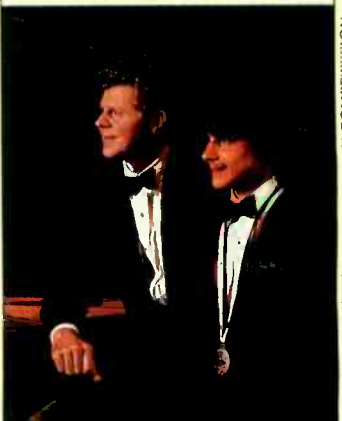
nal rounds, the program will include footage of some world-class pianists who themselves won major competitions early in their careers—**Vladimir Ashkenazy**, **Leon Fleisher**, **Bella Davidovich**, **Emanuel Ax**, and **Van Cliburn** himself.

The top 1989 Cliburn competition winners were **Aleksei Sultanov** of the U.S.S.R. (aged nineteen), who took first prize; **Jose Carlos Cocarella** of Brazil (thirty), second prize; and **Benedetto Lupo** of Italy (twenty-five), third prize. The prizes, which include various cash awards and concert tours, offer each of them the opportunity of making a compact disc recording for Teldec.

Van Cliburn's own early-Fifties recording of the *Tchaikovsky First Piano Concerto* on RCA, which became the first classical album ever to be certified Gold (representing \$1 million in sales), has just set a new record as the first Platinum Album in the classical field. That means more than a million copies sold, in all formats. □

CANADA'S independent Fanfare label, celebrating its fifth anniversary this year, has come up with an expanded release schedule for the next few months. Topping the list is an album entitled "Meet Me in St. Louis," a collection of turn-of-the-century hits sung by contralto **Maureen Forrester** and tenor **Glyn Evans** with the Toronto Palm Court Orchestra under **John Arpin**. Arpin is also represented, as a pianist, by three

Cliburn, Sultanov: winners



Morrison: up from Down Under





new solo albums on Fanfare—a collection of ragtime hits, an album of pieces by Louis Moreau Gottschalk, and one called “The Best of Honky Tonk Piano.”

A “Best of Maureen Forrester” album drawn from the Fanfare catalog is due in shops by Christmastime, and she has an album of Mahler songs lined up for release in early 1990 as well. Her concert schedule, in fact, calls for performances of Mahler’s *Das Lied von der Erde* in Vancouver and Kansas City in March. Moreover, she’ll make a debut at La Scala in Milan in late spring, where she’ll sing in Tchaikovsky’s *The Queen of Spades*. □

FRENCH duo-pianists Katia and Marielle Labèque, who return to this country in November for an extensive tour, are now repre-



The Labèque sisters: fruitful relationships

havishnu Orchestra fame. The principal work is a concerto for guitar and orchestra by McLaughlin that he’s titled *The Mediterranean*, in which he’s the soloist, but the disc is filled out with duos for guitar and piano performed by McLaughlin and Katia Labèque. □

Linda Ronstadt made her name, and her fortune, in rock-and-roll: She’s sold more than forty million records. But in the Eighties Ronstadt has explored nearly every genre of popular music except rock, from the light opera of *The Pirates of Penzance* to three lush albums of jazz-inflected standards with the late orchestrator-conductor Nelson Riddle to unreconstructed country in “Trio” with Dolly Parton and Emmylou Harris and an album of the mariachi music she heard as a child.

Now, with “Cry Like a Rainstorm, Howl Like the Wind,” Ronstadt has returned to the music that made her famous. Among the stellar cast of supporting musicians on this new Elektra record, produced by Ronstadt’s long-time rock collaborator, Peter Asher, is New Orleans vocalist Aaron Neville. □

Stewart Copeland has come a long way since his days as percussionist for

the Police. He’s written music for four films—Francis Ford Coppola’s *Rumble Fish*, Oliver Stone’s *Wall Street* and *Talk Radio*, and John Hughes’s *She’s Having a Baby*. He also composes the music for the TV series *The Equalizer* and did a ballet score for the San Francisco Ballet’s *King Lear*. Now he’s written the music for an opera, *Holy Blood and Crescent Moon*, which will be given its première by the Cleveland Opera this month.

Commissioned by the company to inaugurate its 1989 season, *Holy Blood and Crescent Moon* is set during the Crusades of the twelfth century. It describes the relationship between Christians and Moslems, focusing on the prejudices and misunderstandings between the cul-

tures, which Copeland observed firsthand as a young man when his father, a diplomat, was stationed in the Middle East. The score calls for an orchestra, soloists, a chorus, and dancers. □

GRACENOTES. PolyGram has dug deep into its jazz vaults to produce a series of CD and cassette releases under the title “Jazz Club.” Four of the albums feature particular instruments, and two others are devoted to the big bands and vocalists. The vocal album gathers performances by such immortals as Ella Fitzgerald, Billie Holiday, Sarah Vaughan, Dinah Washington, Jimmy Rushing, and Joe Williams, among others. . . . The Fat Boys have recorded what they describe as “the world’s first rap opera,” *On and On*, set for release by Tin Pan Apple/



Copeland (center): opera now

Mercury Records. Plans are afoot for the Boys to perform the opera at a New York City theater this fall as a charity benefit. □

Ronstadt: rocking out again



CBS MASTERWORKS

PETER CAITON/MICHELE MORGAN



Forrester: collected

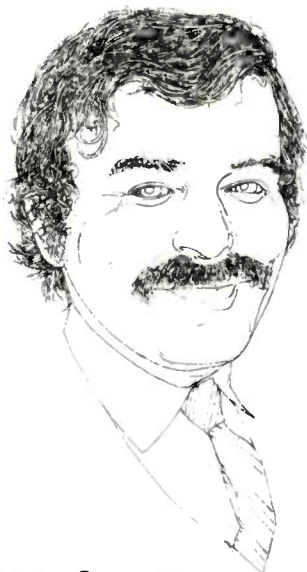
sented on two labels, Philips and CBS. They’ve been with Philips for some time, and they recently recorded for the label Poulenc’s Concerto for Two Pianos, which will be released sometime next year. But a few months ago the Labèques also signed a contract with CBS Masterworks. The first fruit of that relationship is their newly released recording of songs and dances from Leonard Bernstein’s *West Side Story* in arrangements for two pianos and percussion by Irwin Kostal.

There’s more to come from the two Labèques on both labels, and one of the sisters is featured in a new CBS album by John McLaughlin, of Ma-

ANASTASIA PANITSIOS/CLEVELAND OPERA

ELEKTRA RECORDS

by *Ralph Hodges*



THE SILVER STANDARD

WITH digital audio tape still dangling just out of reach, the analog cassette remains the audio recording medium of the people. The cassette industry has not failed to exploit the breathing space. Sony, besides becoming a vigorous champion of metal tape, has introduced a new "ceramic composite" cassette shell. TDK, which established the IEC standard for metal tape, is producing a "zinc composite" shell that hasn't yet been seen in this country, but may be someday. The new shells are at least as interesting as the new tapes. They are clearly aimed at enhancing the rigidity and stability of the tape housing, and they imply that the industry is finally agreeing that proper mechanical tape guidance is all-important. Nothing good can happen without it—nothing, that is, that can reliably challenge the reproduction standards that the CD is establishing.

Azimuth—the physical relationship between the recorded tracks on the tape and the vertical, hair-line gaps of the tape heads, which should engage each other in a precisely perpendicular fashion—is the issue of

greatest concern. An azimuth error between tape track and head gap wipes out high-frequency response rapidly, and it also dumps considerable misinformation into noise-reduction circuitry, which then proceeds to misbehave in the midrange as well as at high frequencies. No practical electronic corrections are possible.

Since the cassette shell *and* the cassette machine share responsibility for tape guidance, it's easy for a tape or a deck manufacturer to blame the other party for an azimuth error. What is extremely difficult is for third parties to determine which, if not both, is at fault.

About the turn of the decade, BASF began assembling, by trial and error, a precision metal cassette shell in which every parameter known to affect tape guidance was adjustable by calibrated increments. With this device, which costs some \$45,000 per copy to produce, BASF began investigating the cassette-machine interface.

The test cassette shell was informally dubbed the Gold Standard, and much of what was learned from it went into BASF's Silver Standard calibration cassettes, which became available earlier this year. A sample is now before me. It is recognizably a cassette, outside and in, as can be seen through the transparent top plate. It is not adjustable in any significant way, although it can be disassembled and loaded with other tapes—a useful feature for duplicators who distrust their production cassette shells and may want to run their standard tape through a superior mechanism.

Its housing consists of the top plate and a hub-deep tray machined from solid German silver (a zinc-nickel-copper alloy selected for its toughness and corrosion resistance). The top plate has almost nothing to do with tape guidance except to hold the parts in. It doesn't even receive the tips of the guide-roller pins (evidently stainless steel, as are the rollers), which are capped with tiny bronze-colored C-clips instead.

The tape itself is BASF chrome (Type II, that is). Half of it is recorded full-track with a 12.5-kHz tone for azimuth adjustment, and

the other half is left blank for the user's own recording projects. BASF will cheerfully supply other calibration tapes (frequency response, etc.) that can be substituted.

The Silver Standard cassette, officially referred to as a "calibration mechanism," evidently came about not just through BASF's own initiative but also because of insistent outside urging. Responsible tape duplicators have been pleading for an azimuth standard for years, and tests of the Silver Standard they've conducted at meetings of the International Tape Association have persuaded the majors that the BASF device has the consistency required. Cassette-shell fabricators, also desperate for something to measure up to, have been equally responsive according to BASF's national sales director for professional products, Terry O'Kelly. Equipment manufacturers have lagged a bit in interest, but O'Kelly and others think that that will change because of Dolby S (see "Signals" in August).

Dolby Labs, with feet in both the hardware and software camps, is seen as the ideal go-between for the industry and the Dolby S system as the ideal carrot-and-stick incentive. Dolby's manager of software licensing, Dennis Staats, comprehends the industry's view: "We favor the BASF standard, because the homework has been done, and especially because it's the only thing like it out there. Should we make conformance to it a requirement for S-type licensees? We're still investigating, trying to find out what's *really* going on right now. We would like to support an azimuth standard that advocates theoretical zero error. But we don't know where theoretical zero is. Does BASF [know], despite all good intentions?"

Meantime, although BASF expects to make no profit on the product, offering it only as an industry service, you too can own a Silver Standard cassette. A \$1,000 check will do the trick (send it to the company's branch office in Bedford, Massachusetts), and you'll be able to record and play cassettes to the highest industry standard yet devised. If the price seems too steep, at least be glad that many in the industry are willing to pay it. □



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