

POLK SDA-SRS 2, KEF 107, B&W MATRIX 2  
WE TEST THESE AND MORE NEW SPEAKERS

NOVEMBER 1986

\$2.50 USA  
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# HIGH FIDELITY

AUDIO • VIDEO • TELEVISION • MUSIC

## REPLACING "THE GOLDEN EAR"

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- WHAT TODAY'S METHODS CAN AND CAN'T TELL YOU
- HOW NEW TESTS MAY SIMULATE HUMAN HEARING

### LIGHTS, CAMCORDER, ACTION!

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**Matthew Polk's Awesome Sounding SDA-SRS & SDA-SRS 2**



**SDA SRS 2**  
\$995 ea.

**SDA SRS**  
\$1395 ea.

*Digital Disc Ready*

**Matthew Polk, the loudspeaker genius, with his Audio Video Grand Prix winning SDA-SRS and latest technological triumph: the extraordinary SDA-SRS 2, honored with the 1986 CES Design & Engineering Award.**

# "The Genius of Matthew Polk Has Created Two Awesome Sounding Signature Edition SDAs"

*"Spectacular... it is quite an experience"*

*Stereo Review Magazine*

**N**ow the genius of Matthew Polk brings you the awesome sonic performance of the SDA-SRS in a smaller, more moderately priced, but no less extraordinary loudspeaker, the SDA-SRS 2.

## *Matthew Polk's own dream speakers can now be yours!*

Matthew Polk's ultimate dream loudspeaker, the SDA-SRS, won the prestigious Audio Video Grand Prix Speaker of the Year award last year. Stereo Review said "Spectacular... it is quite an experience" and also stated that the SRS was probably the most impressive new speaker at the 1985 Consumer Electronics Show. Thousands of man hours and hundreds of thousands of dollars were spent to produce this ultimate loudspeaker for discerning listeners who seek the absolute state-of-the-art in musical and sonic reproduction.

Matthew Polk has, during the last year, continued to push his creative genius to the limit in order to develop a smaller, more moderately priced Signature Edition SDA incorporating virtually all of the innovations and design features of the SRS without significantly compromising its awesome sonic performance. The extraordinary new SRS 2 is the spectacularly successful result. Music lovers who are privileged to own a pair of either model will share Matthew Polk's pride every time they sit down and enjoy the unparalleled experience of listening to their favorite music through these extraordinary loudspeakers, or when they demonstrate them to their admiring friends.

## *"Exceptional performance no matter how you look at it"*

*Stereo Review*

Listening to any Polk True Stereo SDA\* is a remarkable experience. Listening to either of the Signature Edition SDAs is an awesome revelation. Their extraordinarily lifelike three-dimensional imaging surrounds the listener in 360° panorama of sonic splendor. The awe inspiring bass performance and dynamic range will astound you. Their high definition clarity

allows you to hear every detail of the original musical performance; while their exceptionally smooth, natural, low distortion reproduction encourages you to totally indulge and immerse yourself in your favorite recordings for hours on end.

Julian Hirsch of Stereo Review summed it up well in his rave review of the SDA-SRS: "The composite frequency response was exceptional... The SDA system works... The effect can be quite spectacular... We heard the sound to our sides, a full 90° away from the speakers... As good as the SDA feature is, we were even more impressed by the overall quality of the Polk SDA-SRS... The sound is superbly balanced and totally effortless... Exceptional low bass. We have never measured a low bass distortion level as low as that of the SDA-SRS... It is quite an experience! Furthermore, it is not necessary to play the music loud to enjoy the tactile qualities of deep bass... Exceptional performance no matter how you look at it."

The awe-inspiring sonic performance of the SDA-SRS 2 is remarkably similar to that of the SRS. Words alone can not express the experience of listening to these ultimate loudspeaker systems. You simply must hear them for yourself!

## *"Literally a new dimension in sound"*

*Stereo Review*

Both the SDA-SRS and the SDA-SRS 2 are high efficiency systems of awesome dynamic range and bass capabilities. They both incorporate Polk's patented SDA True Stereo technology which reproduces music with a precise, life-like three dimensional soundstage which is unequalled and gives you, as Julian Hirsch of Stereo Review said, "literally a new dimension in sound". Each beautifully styled and finished SRS 2 cabinet contains 4 Polk 6½" trilaminar polymer drivers, a planar 15" sub-bass radiator, 2 Polk 1" silver-coil polyamide dome tweeters and a complex, sophisticated isophase crossover system. It is rated to handle 750 watts. The SRS utilizes 8-6½" drivers, a 15" sub-bass radiator, 4 Polk tweeters and an even more complex crossover. It is rated to handle 1000 watts.

Both the SDA-SRS and SRS 2 incorporate:  
1.) time compensated, phase-coherent multiple

driver vertical line-source topology for greater clarity, increased coherency, lower distortion, higher power handling, increased dynamic range and more accurate imaging. 2.) a mono-coque cabinet with elaborate bracing and MDF baffle for lower cabinet read-out and lower coloration. 3.) progressive variation of the high frequency high-pass circuitry for point-source

## *"the best SDAs yet... impressive and worthy of Matt Polk's signature"*

*High Fidelity Magazine*

operation and wide vertical dispersion. 4.) the use of small active drivers in a full complement sub-bass drive configuration coupled to a large 15" sub-bass radiator for extraordinarily tight, quick and three-dimensional mid and upper bass detail combined with low and sub-bass capabilities which are exceptional. The speakers are beautifully finished in oiled oak and walnut.

## *Other superb sounding Polk speakers from \$85. ea.*

No matter what your budget is, there is a superb sounding Polk speaker perfect for you. Polk's incredible sounding/affordably priced Monitor Series loudspeakers start as low as \$85 ea. The breathtaking sonic benefits of Polk's revolutionary True Stereo SDA technology are available in all Polk's SDA loudspeakers which begin as low as \$395. each.

## *"Our advice is not to buy speakers until you've heard the Polks"*

*Musician Magazine*

The experts agree: Polk speakers sound better! Hear them for yourself. Use the reader service card for more information and visit your nearest Polk dealer today. Your ears will thank you.

**polkaudio**  
The Speaker Specialists®

5601 Metro Drive, Baltimore, Md. 21215

\*U.S. Patent No. 4,489, 432 and 4,487, 064. Other patents pending.

**Matthew Polk's Magnificent Sounding New SDA 2A**



SDA 2A  
\$499.00 ea

*Digital Disc Ready*

**Matthew Polk stands proudly alongside the latest version of his Audio Video Grand Prix Award Winning SDA 2A**

# "The Magnificent Sounding New True Stereo SDA 2A Again Demonstrates the Genius of Matthew Polk"

*This revolutionary speaker is the most extraordinary value in high end audio!*

**M**atthew Polk's magnificent sounding new 3rd generation SDA-2A incorporates many new advances pioneered in his top-of-the-line Signature Edition SRSs. It achieves stunningly life-like musical reproduction which would be remarkable at any price but is simply extraordinary at \$499. each.

## Polk's Revolutionary True Stereo SDA Breakthrough

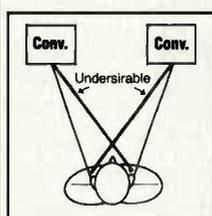
The magnificent sounding new SDA-2A incorporates Polk's revolutionary True Stereo SDA technology. This patented, critically acclaimed, Audio Video Grand Prix Award winning breakthrough is the most important fundamental advance in loudspeaker technology since stereo itself. In fact, the design principles embodied in the SDAs make them the world's first and only True Stereo speakers.

Why do Polk SDAs always sound better than conventional speakers? As illustrated in diagram 1: when conventional loudspeakers are used to reproduce stereo both speakers are heard by both ears which causes a form of acoustic distortion called interaural crosstalk which cuts down stereo separation, obscures detail and interferes with the proper reproduction and perception of imaging, and spaciousness. As illustrated in diagram 2: Polk SDAs are designed so that each speaker is only heard by the one correct ear (i.e. left channel/left ear, right channel/right ear), like headphones. The result is dramatically improved stereo separation, detail and three-dimensional imaging. In order to accomplish this (see diagram 3) each SDA incorporates a separate set of drivers which radiates a special dimensional (difference) signal which cancels the undesirable interaural crosstalk distortion coming from the wrong speaker to the wrong ear. High Fidelity called the results "Mind Boggling".

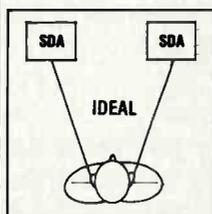
## The Most Extraordinary Value in High End Audio Today

The new SDA-2As, like all the current SDAs, incorporate the latest 3rd generation SDA technology developed for Matthew Polk's Signature Edition SRS and SRS-2 including 1: full complement sub-bass drive for deeper, fuller, tighter and more dynamic bass response; 2: phase coherent time-compensated driver alignment for better focus, lower-coloration smoother, clearer, more coherent midrange and improved front-to-back depth and; 3: bandwidth-optimized dimensional signal for

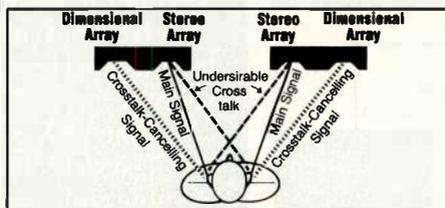
*"The result is always better than would be achieved by conventional speakers..."*  
Stereo Review Magazine



**Conventional Speakers Reproducing Stereo**  
When conventional speakers reproduce stereo, both speakers are heard by both ears which reduces stereo separation, obscures detail and interferes with proper imaging.



**Only Revolutionary Polk SDAs Reproduce True Stereo**  
Only Polk SDAs reproduce True Stereo by allowing each speaker and signal (L or R) to be heard by only the correct ear (like headphones) which results in dramatically improved stereo separation, detail and three-dimensional imaging.



**How Polk SDAs Achieve True Stereo**  
Each Polk SDA incorporates a special extra set of drivers which radiates a difference signal which cancels the undesirable signal going from the wrong speaker to the wrong ear, (interaural crosstalk distortion) resulting in True Stereo reproduction.

smoother high-end and even better soundstage and image. The new SDA-2A is the finest sounding and most technologically advanced speaker ever produced at its extraordinarily modest price. It sounds dramatically better than speakers from other manufacturers that cost 4 times as much and more and is, at \$499 ea., truly the speaker of your dreams at a price you can afford.

*"Breathtaking... a new world of hi fi listening."* Stereo Buyers Guide

The spectacular sonic benefits of SDA technology are dramatic and easily heard by virtually anyone. Reviewers, critical listeners and novices alike are overwhelmed by the magnitude of the sonic improvement achieved

by Polk's SDA technology. One famous reviewer remarked that after hearing the SDAs his wife said that she heard such a dramatic improvement in the sound that she insisted that he replace their current speakers.

*"Mindboggling, Astounding, Flabbergasting"*

High Fidelity Magazine

All Polk's SDAs, including the new 2As, produce a huge lifelike three dimensional sonic image which will amaze you. You will hear for the first time instruments, ambience and subtle musical nuances which are present on your recordings but masked by the interaural crosstalk distortion produced by conventional speakers. Stereo Review said, "Spectacular... literally a new dimension in the sound... the result is always better than would be achieved by conventional speakers". High Fidelity said, "Mind Boggling... Astounding... Flabbergasting... we have yet to hear any stereo program that doesn't benefit". With SDAs every instrument, vocalist and sound becomes distinct, tangible and alive; allowing you to experience the spine tingling excitement, majesty and pleasure of live music in your own home.

## Other Superb Sounding Polks From \$85. to \$1395. each

No matter what your budget is there is a superb sounding Polk speaker perfect for you. Polk's incredible sounding/affordably priced Monitor Series loudspeakers utilize the same basic components as the SDAs and begin as low as \$85. each. The breathtaking sonic benefits of Matthew Polk's revolutionary True Stereo SDA technology are available in 5 SDA models priced from \$395. to \$1395 ea.

*"You owe it to yourself to audition them"*

High Fidelity

The experts agree: Polk speakers sound better. Use the reader's service card or write to us for more information. Better yet, visit your nearest Polk dealer today. Your ears will thank you.

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# Not Evolutionary,

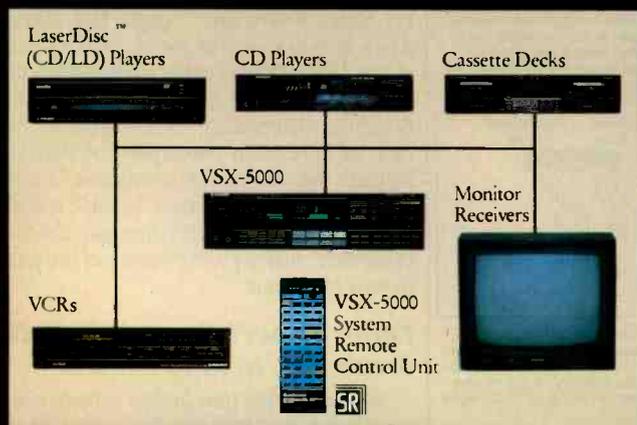
## Pioneer's Revolutionary Audio/Video Receiver.

Necessity. The mother of invention. And now from Pioneer comes a revolutionary invention made necessary by the rapidly merging technologies of digital audio and high quality video.

Meet the Pioneer VSX-5000.

A new product that should be first on your list when you decide to get into a home A/V system, be it simple or complex.

A new product that takes all your audio and video components and consolidates them with complete central control.



A new product that gives you the same true Dolby Surround<sup>®</sup> Sound you find in first-class movie theatres. As well as a choice of other surround sounds like "Stadium" for viewing spectator sports or concerts, or "Studio" for watching Jazz or Rock performances. There's even Simulated Stereo that adds ambience to mono sound sources, and a Dynamic Expander that adds impact and excitement to compressed music sources.

A new product that optimizes high quality signals like CD and LaserVision while sharply upgrading the fidelity of lesser-quality signals like mono VCR sound, analog records or standard broadcast TV.

A new product with a built-in video enhancer

and video noise filter to get maximum sharpness and quality out of VCRs, LaserVision players, video monitors or projection TVs. And Pioneer's unique split-screen video format lets you enhance picture

quality during recording or playback while comparing the processed picture side-by-side with the original.

The features just listed make the VSX-5000 an incredible value. Yet you get even more. The VSX-5000 is a complete 100-watts per channel<sup>\*\*\*</sup> receiver with Pioneer's exclusive Non-Switching<sup>™</sup> Type II Vari-Bias<sup>™</sup> circuitry to eliminate transistor switching and reduce intermodulation distortion. A Quartz-PLL AM/FM tuner includes innovations like a visual alphanumeric readout that identifies your favorite station formats—"Jazz," "Rock," or by station call letters. And a presettable 3-position Acoustic Memory remembers how you like your bass and treble set for particular music styles, or different audio sources.

The VSX-5000 includes Pioneer's "SR"<sup>™</sup> system. It stands for System Remote and assures complete compatibility of each Pioneer SR product assembled into your system. In the VSX-5000, you get a 59-function SR remote control unit that gives you unheard-of control and flexible operation: right from your armchair.

By now you can see just how indispensable the VSX-5000 is to a complete audio/video center. There's practically nothing it won't do to improve audio and video. And when the future brings new components to the market, the VSX-5000 will be ready to handle them too.

The revolutionary Pioneer VSX-5000. The heart and soul of your audio and video system. Both today. And tomorrow.

# Revolutionary.



 **PIONEER**<sup>®</sup>  
CATCH THE SPIRIT OF A TRUE PIONEER.

# HIGH FIDELITY

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Model 41 combines the HQ system and comb filters for absolutely sensational video tape clarity and color accuracy. And VHS Hi-Fi gives you audio performance that rivals compact disc! This VCF will also work as a long-play high-spec audio recorder. It's the heart of a superb audio/video system. Only \$599.95 or as low as \$28 per month\*.

## VHS Stereo With Dolby® Noise Reduction

Model 31 has features that simplify operation. Auto-function loads a tape, plays it, rewinds, and shuts off. An input selector makes it easy to tape TWFM simulcasts. You also get a 110-channel cable-ready tuner and a 14-day/5-event timer. Only \$499.95 or as low as \$23 per month\*.

## In Stock Today at Our Store Near You

Both of these versatile decks include first-class owner's manuals, an important item that many other brands skip on. So come in today. See and hear for yourself the Realistic difference in our best-ever VCRs!

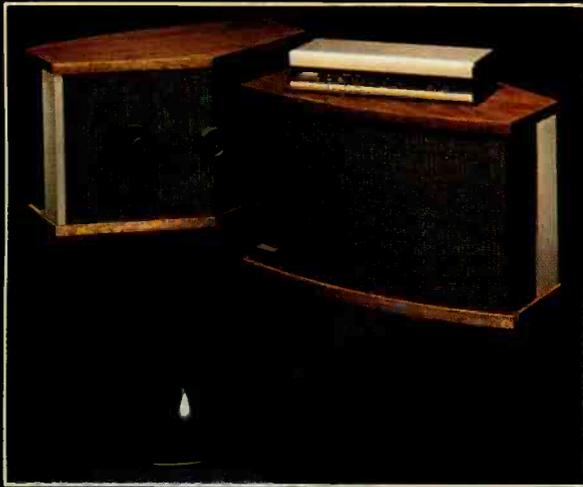
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# A speaker designed to one standard: Live music.

If you have ever heard music live, you can appreciate what's behind the Bose® 901® Series V Direct/Reflecting® speaker system.

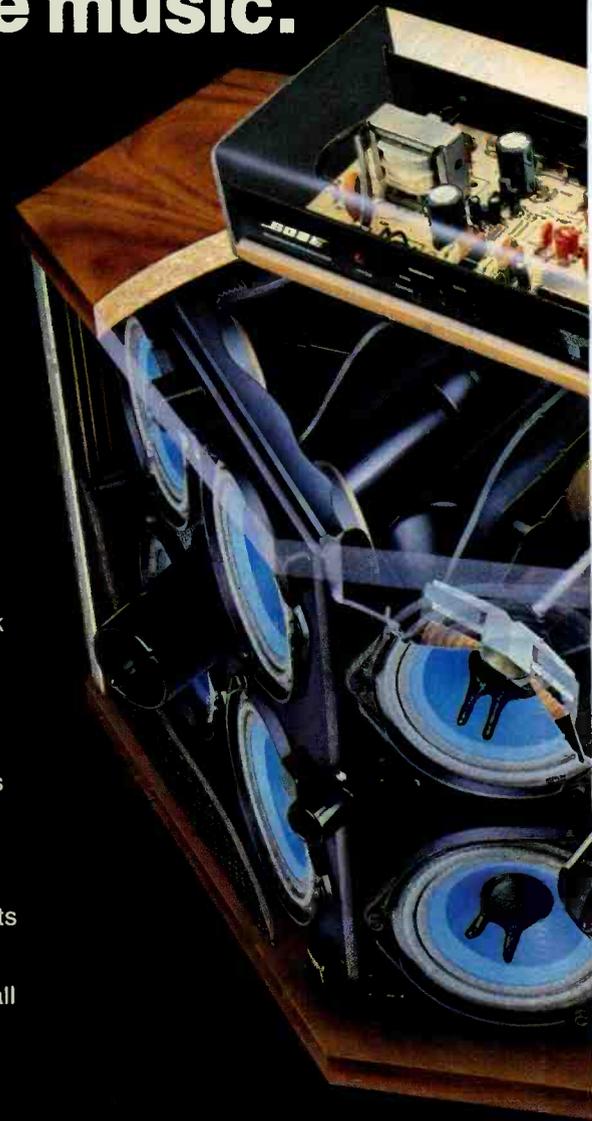
Live music is the complex interaction of direct and reflected sound. Most speakers, however, are not designed with this in mind—which is why they sound more like speakers and less like music.

This was the conclusion reached years ago by a Massachusetts Institute of Technology research team led by Dr. Amar G. Bose. Through extensive research, his team discovered the secret of live music: that it is the precise balance of direct and reflected sound heard during live performances that makes live music sound live. Finally, they designed a product that could put this discovery to work in the living room: the Bose 901 Direct/Reflecting® system.

## The Bose 901 Series V speaker: a system of audio innovations.

The introduction of the revolutionary Bose 901 system in 1968 redefined the phrase "high fidelity." For the first time, a speaker was capable of reproducing music with much of the impact, clarity and spaciousness of a live performance. The 901 system's concert hall sound and compact size made it an instant success with both audio critics and audio enthusiasts.

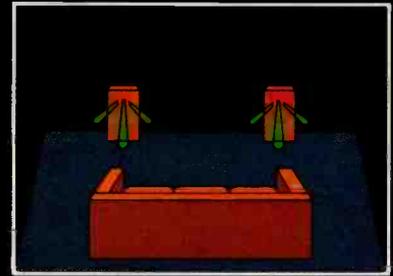
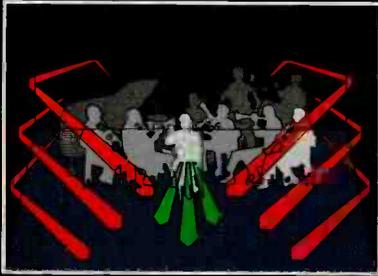
Today's 901 Series V system incorporates some 350 improvements over the original. The speaker's innovative audio technology turns your listening room into an essential part of your stereo system. The 901 system works by reflecting most of its sound, instead of aiming all



The Bose 901 system's Direct/Reflecting® speaker design turns your listening room into part of your stereo system. You'll hear full stereo throughout the listening environment—no matter where you sit or stand.

The 901 system's nine full-range HVC drivers are precisely arranged to re-create live music's natural balance of direct and reflected sound. Each driver is matched and tested by the Bose Syncom® II computer.

The Eose-built HVC driver is made out of some of the strongest advanced composite materials available. The heart of the driver is the Helical Voice Coil, which handles instantaneous peaks of up to 4,000 watts! Multiple HVC drivers give the 901 system unlimited power handling in home applications.



In the concert hall (above left), listeners hear a complex mixture of direct and reflected sounds, arriving from different directions and at different times. Bose Direct/Reflecting® speakers (center) are designed to reproduce music in much the same manner, allowing listeners to hear greater realism and impact. Conventional speakers (above right), on the other hand, reproduce primarily direct sound, causing listeners to miss many of the critical acoustic cues that make live music sound live.

the sound toward you like a conventional speaker. So, anything you listen to over a 901 system picks up a strong sense of concert hall realism, because the system is capable of reproducing the concert hall's natural balance of direct and reflected sound. Best of all, the 901 system's ultra-high efficiency and *unlimited power handling* in home applications make it compatible with almost any stereo system.

#### The right speaker for the best in audio: digital.

Obviously, a speaker system this exceptional deserves the best possible source of sound available. That's why for a limited time, Bose has a digital bonus when you invest in 901 speakers.

When you buy a Bose 901 system at a participating dealer between October 1, 1986 and January 15, 1987, Bose will give you your choice of eight free compact discs from a CBS® records special collection! And you'll hear your CD's as close to live as possible, because the Bose 901 system has been specifically engineered to take full advantage of their superior sound. Digital Dynamic Range® circuitry and Direct/Reflecting® speaker design allow the 901 system to accurately reproduce live music's impact, clarity and spaciousness.

**FREE!**  
**Eight Compact Discs**  
from a CBS® Records special collection when you buy a Bose 901 system!  
Details at left.

#### The right speaker for your entire system

Whether you're listening to digital audio or hi-fi video, the Bose 901 Series V system will let you get the most out of your entire equipment and software investment—because it will let you hear all of the realism that a truly good audio/video system is capable of producing. Audition the Bose 901 Direct/Reflecting® speaker system at your authorized Bose dealer, and judge for yourself. Then take the next step—and invite a legend home.

There is an entire line of Bose speakers that incorporates much of the advanced technology developed for the 901 system. For more information and an all product brochure, write Bose Corporation, Dept. HF, 10 Speen Street, Framingham, MA 01701.

When you write for information, be sure to request a copy of Dr. Amar Bose's *Sound Recording and Reproduction*. This paper describes the research effort behind the original Bose 901 system.

The Acoustic Matrix™ enclosure helps the 901 system control sound by precisely controlling air. Made up of 14 separate acoustic regions, it isolates the drivers and regulates internal air flow, resulting in increased bass and lower distortion.

The Bose 901 active equalizer uses low-distortion electronics to control the system's total frequency response, allowing a compact system to produce full-frequency sound. Digital Dynamic Range® circuitry makes the entire system ideal for use with the best sources available.

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**BOSE**  
Better sound through research.

# Polk Audio

The Speaker Specialists®

## Where to buy Polk Speakers?

### AUTHORIZED DEALER LIST

CANADA: Call Evolution Technology, Toronto for nearest dealer 1-800-263-6336

**AL Auburn:** Audio Warehouse • **Birmingham (Homewood):** Audition • **Huntsville:** Campbell's Audio Video, Sound Distributors • **Mobile:** Sound Advice • **Montgomery:** The Record Shop

**AK Anchorage:** Shimek's • **Fairbanks:** Holth Music

**AZ Flagstaff:** Sound Pro • **Mesa:** Hi-Fi Sales • **Tucson:** Audio Emporium

**AR Little Rock:** Leisure Electronics • **Searcy:** Sound Room

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**DC Myrt Emco**

**FL Altamonte Springs:** Audio Spectrum • **Boca Raton:** Capt. Video • **Daytona Beach:** Stereotypes • **FL Lauderdale:** Capt. Video • **FL Myers:** Stereo Garage • **FL Pierce:** Sound Shack • **FL Walton Beach:** Audio International • **Jacksonville:** Audio Tech • **Lakeland:** Sound Factory • **Merritt Island:** Southern Audio • **Miami:** Audio By Caruso • **Capri Video:** Sympathetic Ear • **Naples:** Stereo Garage • **Orange Park:** Audio Tech • **Orlando:** Audio Spectrum • **Pensacola:** Fider Hi-Fi • **Tallahassee:** Stereo Store • **Tampa:** Audio Vision • **W. Palm Beach:** Electronic Connection

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**HI Honolulu:** Stereo Station

**ID Boise:** Stereo Station • **Moscow:** Audio Vision • **Practical:** Stokes Brothers • **Sandpoint:** Electronic • **Trink Falls:** Audio Warehouse

**IL Aurora:** Stereo Systems • **Bloomington:** Alan's Creative Stereo • **Buffalo Grove:** Columbia Audio Video • **Carbondale:** Southern Stereo • **Champaign:** Good Vibes Sound Inc. • **DeKalb:** Audio Plus • **Hoffman Estates:** Simply Stereo • **Highland Park:** Columbia Audio Video • **Joliet:** Stereo Systems • **Lansing:** Audio Clinic • **MI Prasad:** Simply Stereo • **Naperville:** Stereo Systems • **Northbrook:** Alan's Creative Stereo • **Peoria:** Team Electronics • **Riverdale:** Simply Stereo • **Rockford:** Columbia Audio Video • **Schaumburg:** Alan's Creative Stereo • **Hi-Fi Hutch • Springfield:** Sundown One • **Sterling:** Midwest Hi-Fi • **Vernon Hills:** Alan's Creative Stereo • **Villa Park:** Hi-Fi Hutch • **Waukegan:** Alan's Creative Stereo

**IN Bloomington:** Hooser Electronics • **Burlington:** Eye TV & Stereo • **FL Wayne:** Classic Stereo • **Lafayette:** Good Vibes Sound Inc. • **Marion:** Classic Stereo • **Muncie:** Classic Stereo • **South Bend:** Classic Stereo • **Terre Haute:** Hooser Electronics

**IA Des Moines:** Audio Lads • **Fairfield:** Golden Ear Audio Video • **Mason City:** Sound World • **Sioux City:** Audio Emporium

**KS Junction City:** Audio Junction • **Overland Park:** Audio Electronics • **Wichita:** Audio Vision • **Topeka:** Nelson's

**KY Bowling Green:** Audio Center • **Lexington:** Stereo Shopper • **Ovaton:** Audio • **LA Grima:** Stereo Village • **Lafayette:** Sound Electronics • **Metairie:** Stereo Village • **New Orleans:** Stereo Village • **Opalouss:** Sound Electronics • **Shreveport:** Audio Fidelity • **West Monroe:** Audio West

**ME Bangor:** Sound Source • **Camden:** Harbor Audio Video • **Westbrook:** Hawkes TV • **The Sound Cellar**

**MD Annapolis:** Audio King • **Baltimore:** Soundscape • **Frederick:** Evergreen Audio • **Rockville:** Myer Emco

**MA Boston:** Walham Camera & Stereo • **Fitchburg:** Fitchburg Music • **N. Dartmouth:** Creative Sound Systems • **Worcester:** O'Connors

**MI Ann Arbor:** Absolute Sound • **Birmingham:** Almas Hi-Fi • **Darabont:** Almas Hi-Fi • **East Lansing:** Stereo Shoppe • **Farmington Hills:** Almas Hi-Fi • **Grand Rapids:** Classic Stereo Ltd. • **Iron Mountain:** Sound North • **Kalamazoo:** Classic Stereo Ltd. • **Lansing:** Stereo Shoppe • **Portage:** Sound Room • **Royal Oak:** Absolute Sound • **Saginaw:** Audio Shoppe • **Dearborn:** Listening Room • **Traverse City:** Stereo Shoppe

**MN Brooklyn Center:** Audio King • **Burnsville:** Audio King • **Duluth:** Me's TV & Audio • **Edina:** Audio King • **Minnetonka:** Audio King • **Minneapolis:** Audio King • **Minnetonka:** Audio King • **Rochester:** Audio

King • **Roseville:** Audio King • **St. Paul:** Audio King

**MS Columbus:** Audio Advantage • **Gulfport:** Empress • **Jackson:** Walters Audio • **Passcagoussa:** Empress • **Tupelo:** Audio Advantage

**MO Cape Girardeau:** Stereo One • **Columbia:** D & M Sound • **Lebanon:** Sight & Sound • **St. Louis:** Sound Central

**MT Bozeman:** Thrifty Ear • **Great Falls:** Rocky Mountain Hi-Fi

**NC Asheville:** Mt. Toad's Stereo Video • **Chapel Hill:** Stereo Sound • **Charlotte:** Stereo Video • **Irfs • Gastonia:** Irf's • **Greensboro:** Stereo Sound • **Kannapolis:** Irf's • **Moorehead City:** Anderson Audio • **New Bern:** Anderson Audio • **Pineville:** Stereo Video • **Raleigh:** Audio Boys Stereo Sound • **Wilmington:** Atlantic Audio • **Winston-Salem:** Stereo Sound

**ND Bismarck:** Pacific Sound • **Minot:** Midwest Audio

**NE Lincoln:** Stereo West • **Norfolk:** Mid City Stereo • **Omaha:** Stereo West

**NH Concord:** Audio of New England • **Lacota:** Audio of New England • **New London:** North Star Electronics • **Salem:** Gemini

**NJ East Brunswick:** Atlantic Stereo • **Franklin Lakes:** Franklin Lakes Stereo • **Maple Shade:** Bryn Mawr Stereo • **Montclair:** Perdue Radio • **Raritan:** AC Audio • **Ridgewood:** Sounding Board • **Shrewsbury:** Mornmouth Stereo • **Toms River:** Rands Camera • **West Caldwell:** Perdue Radio

**NH Albuquerque:** Real Time Audio • **Albuquerque:** D&K Electronics • **Carlsbad:** Beason's

**NV Las Vegas:** Upper Ear • **Reno:** The Audio Soundtrack

**NY Albany:** Clark Music • **Batavia:** Unicorn Audio • **Buffalo:** Speaker Shop • **Corning:** Chemung Electronics • **Elmira:** Chemung Electronics • **Fredonia:** Studio One • **Glovers Falls:** Audio Genesis • **Huntington:** Audio Breakthroughs • **Jamestown:** Chemung Electronics • **Jonestown:** Studio One • **Manhasset:** Audio Breakthroughs

**Newburgh:** Rand's Electronics • **New York City:** Audio Breakthroughs • **Electronic Workshop • Rochester:** JB Sound • **Scarsdale:** Listening Room • **Syracuse:** Clark Music • **Vestal:** Hart Electronics • **Wappingers Falls:** Rand's Electronics

**OH Cleveland:** Audio Craft • **Cincinnati:** OH Cleveland • **Columbus:** Stereo Lab • **Fairlawn:** Audio Craft • **Findlay:** Audio Craft • **Lima:** Classic Stereo • **Mayfield Heights:** Audio Craft • **Toledo:** Audio Craft • **Westlake:** Audio Video

**OK Lawton:** Hi-Fi Shop • **Oklahoma City:** Audio Dimensions • **Tulsa:** Audio Advice

**OR Beaverton:** Stereo Superstore • **Eugene:** Bradford's High Fidelity • **Portland:** Stereo Superstore

**PA Allentown:** Bryn Mawr Stereo • **Altoona:** Sound Concepts • **Bakery:** Hart Electronics • **Bryn Mawr Stereo:** Bryn Mawr Stereo • **Camp Hill:** Bryn Mawr Stereo • **Erie:** Studio One • **Frazier:** Bryn Mawr Stereo • **Indiana:** Sound Concepts • **Jenkintown:** Bryn Mawr Stereo • **Johnstown:** Garry's Entertainment • **Kingston:** Hart Electronics • **Lancaster:** GNT Stereo • **Montgomeryville:** Bryn Mawr Stereo • **Natona Heights:** Stereo Land • **Philadelphia:** Bryn Mawr Stereo • **Pittsburgh:** Audio Junction • **Quakertown:** Bryn Mawr Stereo • **Reading:** GNT Stereo • **Sellinagrove:** Stereo Shop • **Williamsport:** Audio Video

**PR PUERTO RICO Rico Piedras:** Precision Audio R1 • **Providence:** Eastern Audio

**SC Charleston:** Audio Warehouse • **Columbia:** Stereo Shop • **Greenville:** Mitch's Stereo • **Greenwood:** Stereo Shop • **Rock Hill:** Irf's • **Spartanburg:** Stereo Shop • **St. Rapid City:** Team Electronics • **Slousville:** Audio Video

**TN Chattanooga:** College Hi-Fi • **CMKeville:** Nelson Entertainment • **Johnson City:** Mt. Toad's Stereo Video • **Kingsport:** Mt. Toad's Stereo Video • **Knoxville:** Lindsey Ward • **McMinnville:** Network Entertainment • **Memphis:** Opus II • **Nashville:** Hi-Fi Boys

**TX Arlington:** Sound Idea • **Austin:** Audio Video • **Beaumont:** Broca Audio • **College Station:** Audio Video • **Corpus Christi:** Tape Town • **El Paso:** Soundquest • **FL Worth:** Sound Idea • **Galveston:** Island Audio • **Houston:** Sheffield Audio • **Hurst:** Sound Idea • **Longview:** Audio Techniques • **Lubbock:** Ultra Electronics • **Dallas:** Harold's Electronics • **Shamrock:** Westside Stereo • **Temple:** Audio Tech • **Texasark:** Sound Town • **Waco:** Audio Tech

**UT Logan store only:** Stokes Brothers • **Salt Lake City:** Broader Music

**VT Burlington:** Audio Den

**VA Bristol:** Mt. Toad's Stereo Video • **Charlottesville:** Sound Machine • **Falls Church:** Myer Emco • **Leesburg:** Evergreen Audio • **Richmond:** Garry's Stereo • **Roanoke:** Audiophonics • **Virginia Beach:** Digital Sound

**WA Bellevue:** Northwest Audio Video • **Bellevue:** DC Stereo • **Lynnwood:** Northwest Audio Video • **Oak Harbor:** DC Stereo Center • **Richland:** Tin Ear Stereo • **Seattle:** Definitive Audio • **Northwest Audio Video • Spokane:** Electracast (H&H) • **Tulwin:** Northwest Audio Video

**WV Barboursville:** Ped Piper • **Beckley:** Ped Piper • **Huntington:** Ped Piper • **Morgantown:** Sound Post • **Piedmont:** Sound gallery

**WI Appleton:** Sound World • **Eau Claire:** EME Audio Systems • **Green Bay:** Sound World • **Madison:** Evergreen Audio • **Happy Medium:** Marine • **Sound Seller • Milwaukee:** Audio Emporium • **Wausau:** Sound World

**WY Cheyenne:** Team Electronics • **Riverton:** Sound Room

# C U R R E N T S



## "Digital" VCR from RCA

NOW, ALMOST TWO YEARS AFTER THE FIRST digital television sets were introduced, similar circuitry can be found in RCA's VMT-400 VHS videocassette recorder. The new model, said to be the first of its kind to reach the consumer market, incorporates nine dynamic random-access memories to provide both tape and tuner special effects.

The picture-in-picture function allows a tape and any TV station to be viewed simultaneously, with either one superimposed in a small box in any corner of the screen. This feature can also be used in conjunction with a video camera to, for example, monitor a sleeping child or screen visitors at the front door. In addition, a freeze frame can be made from any off-air broadcast (including one within the picture-in-picture display)

while the sound continues to run. Tape special effects (slow motion, still frame, search) are said to be rendered virtually noise-free by the digital circuitry. Two digital video effects can be applied to both tape and off-air pictures: One is a "mosaic" effect (sometimes seen in sports shows), and the other is a "mottled" look like that used in music videos.

Other features include a 119-channel tuner, a four-event/one-year timer with on-screen programming, HQ picture circuitry (three of the four available circuits are used), and a full-function wireless remote control. The VMT-400 will work with existing RCA Digital Command remote controls as well. It is expected to cost \$700. For more information, contact RCA Consumer Electronics, 600 N. Sherman Dr., Indianapolis, Ind. 46201.

## AR CAR PRODUCTS

ACOUSTIC RESEARCH'S NEW LINE OF CAR products, the GCS series, consists of nine models, including a three-way modular speaker system (the GCS-100), a pair of drop-in replacement speakers (the 4-by-6-inch GCS-1200 and the 3½-inch dual-cone GCS-1400), and a power amplifier (the GCS-80/40) rated at 80 watts (19 dBW) per channel when operated in the bridged two-channel mode and 40 watts (16 dBW) per channel in the four-channel mode.

The GCS-100 comprises a 6-by-9-inch woofer, a 4-inch midrange driver, and a 1-inch tweeter. A separate crossover module serves two systems and divides the audio spectrum at 220 Hz and 1.3 kHz. As with all the other speakers in the GCS line, the GCS-100's driver diaphragms are made from polypropylene, which is said to be affected less by heat and moisture than are conventional materials and therefore ideal for consistent performance in mobile applications.

The black driver housings are scratch-resistant and have wire-mesh grilles. System impedance is given as 4 ohms, and sensitivity is rated at 93 dB SPL (sound pressure level) at 1 meter with a 2.83-volt input. A pair of GCS-100 systems costs \$260. Details on the entire line of car products can be obtained from Acoustic Research, 330 Turnpike St., Canton, Mass. 02021.

## PIONEER CD/VIDEODISC PLAYER

FOR ITS SECOND COMBINATION CD/VIDEODISC player, the CLD-909, Pioneer has considerably reduced the bulk of the player mechanism. As in the earlier CLD-900, the CLD-909 uses separate motors for playing CDs and videodiscs, but the same laser assembly scans both. A newly developed pulse-count video FM-detector circuit contributes to the unit's rated 400 lines of horizontal resolution and 45-dB video signal-to-noise ratio. A



Still don't see it? That's the whole idea behind Koss' revolutionary infrared stereophones system. The Koss Kordless™ Stereophone. Now, you can enjoy all the benefits of stereophone listening with no strings attached. And while the cord may be missing, the great Sound of Koss isn't. The Kordless system is so advanced it provides a full 20-20KHz frequency response at less than 1% distortion. Plus enough signal to fill a large room. Yet it's as easy to use as conventional stereophones. Just plug the Kordless transmitter into virtually any receiver or amplifier and turn it

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on. Roam around the room listening to a record. Dance to a CD. Enjoy stereo or mono TV broadcasts and videos in bed. Or whatever else moves you. Sound impressive? You bet it does. And the best way to appreciate this major advance in technology is to visit your nearest Koss Kordless™ Stereophone dealer. One listen, and you'll never sit still for ordinary headphones again.

• Koss Stereophones, 4129 N. Port Washington Rd., Milwaukee, WI 53212. Koss Limited, 4112 S. Service Rd., Burlington, Ontario L7L4X5. Koss-Europe: CH-6855, Stabio-Switzerland.

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white paper from Pioneer says that the player has "the highest performance level of any video device in use by the general public," a claim we are prepared to believe. In addition to Compact Discs, the unit will play videodiscs with digital or CX-encoded soundtracks. A multifunction wireless remote control operates most of the player features, including numerous scanning and cueing modes and a ten-track CD program memory. A CD subcode output is provided for con-

nection to as-yet-unannounced accessories. Price is \$900. For more information, contact Pioneer Electronics (U.S.A.), Inc., P.O. Box 1720, Long Beach, Calif. 90801.

**MUSIC ALBUMS ON LASERDISC**

VIDEODISC PLAYERS THAT CAN DECODE digital soundtracks, such as the Pioneer CLD-909, are the major beneficiaries of the "Compact Laserdisc Audio/Video Album,"

a new format introduced by Pioneer's Laserdisc Corporation of America. Each 12-inch disc contains three or four video clips (with digital audio soundtracks) followed by the audio portion of the corresponding Compact Disc in its entirety. During the later portion, a still picture of the album cover is displayed on-screen. Pioneer Artists has agreements with a number of major record companies to supply material for the discs, which are priced near regular Compact Discs at \$17. Contact Laserdisc Corporation of America, 200 W. Grand Ave., Montvale, N.J. 07645.

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**GE'S REMOTE  
POSSIBILITY**



ABOUT A YEAR AGO, GENERAL ELECTRIC introduced a hand-held remote control that could be programmed to take on the functions of as many as four existing infrared remote units of virtually any make. A second model, called Control Central 3, is a slightly trimmed-down version that can digest the contents of as many as three different controllers. Programming is done one key at a time, with the GE remote placed head to head with the other unit to "read" its infrared pulses. A lock switch disables the programming mode to prevent accidental overwriting of the memorized contents. Control keys are labeled for the most common audio and video functions. The unit operates on batteries and sells for \$100. Details are available from General Electric Co., Portsmouth, Va. 23705.



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**Vivaldi, The Four Seasons** • Simon Standage, violin. Trevor Pinnock leads The English Concert. "Breathhtaking."  
—Stereo Review  
Archiv 115356



**Rimsky-Korsakov, Scheherazade** Andre Previn conducts the Vienna Philharmonic Orchestra in a lush, evocative interpretation. Philips 115415



**Dvorak, Symphony No. 9 (From The New World)** Chicago Symphony Orchestra/Solti. "The playing is superlatively good."  
—Gramophone  
London 115168



**Pavarotti: Mamma Mia** Henry Mancini arrangements of 16 Neapolitan songs. Also includes *Vieni sul mar, Musica proibita & Vivere*.  
London 115310



**Gershwin, Rhapsody in Blue; An American in Paris; Concerto** in F André Previn, pianist & conductor; Pittsburgh Symphony Orchestra. Philips 115437



**Mozart, Violin Concertos Nos. 3 & 5** Itzhak Perlman, violin. Vienna Philharmonic/Levine. "Radiantly sumptuous."  
—High Fidelity  
DG 115146



**Galway & Mancini: In The Pink** • *The Pink Panther, Breakfast At Tiffany's, Pennywhistle Jig, Two For The Road, Meggie's Theme*, more. RCA 151758



**Horowitz in London** Schumann, Klinderscenen; Chopin, Poissonne-Fantaisie & Ballade No. 1; Scriabin, Etude in D-Sharp Minor; more. RCA 162507



**Tchaikovsky, Symphony No. 4 (Pathe-tique)** • Chicago Symphony Orch./Levine. "A sound that dazzles and sings."  
—Milwaukee Journal  
RCA 153939



**High, Bright, Light & Clear** • The Canadian Brass plays Baroque music: Air On The G String, Masterpiece Theatre Theme, many others. RCA 144529



**Sunday In The Park With George (Sondheim)** • The Grammy winning original cast album starring Mandy Patinkin and Bernadette Peters. RCA 154014



**Mozart, Symphonies Nos. 40 in G Minor & 41 in C (Jupiter)** James Levine leads the Chicago Symphony Orchestra in strong performances. RCA 104810



**Wagner, Orchestral Highlights From The Ring** • Vienna Philharmonic Orch./Solti. Ride Of The Valkyries, Magic Fire Music, more. London 115426



**Bach, Organ Works** Dantle Chorzewpa plays Toccata & Fugue in D Minor; Prelude & Fugue in E-Flat; Prelude, Largo & Fugue in C. Philips 115193



**Brahms, Hungarian Dances** • Vienna Philharmonic Orchestra led by Claudio Abbado. "Richly played and vividly recorded."  
—Fanfare  
DG 115408



**Mozart, Requiem** M. Price, Schmidt, Araiza, Adam. Leipzig Radio Choir. Dresden State Orchestra conducted by Peter Schreier. Philips 115039

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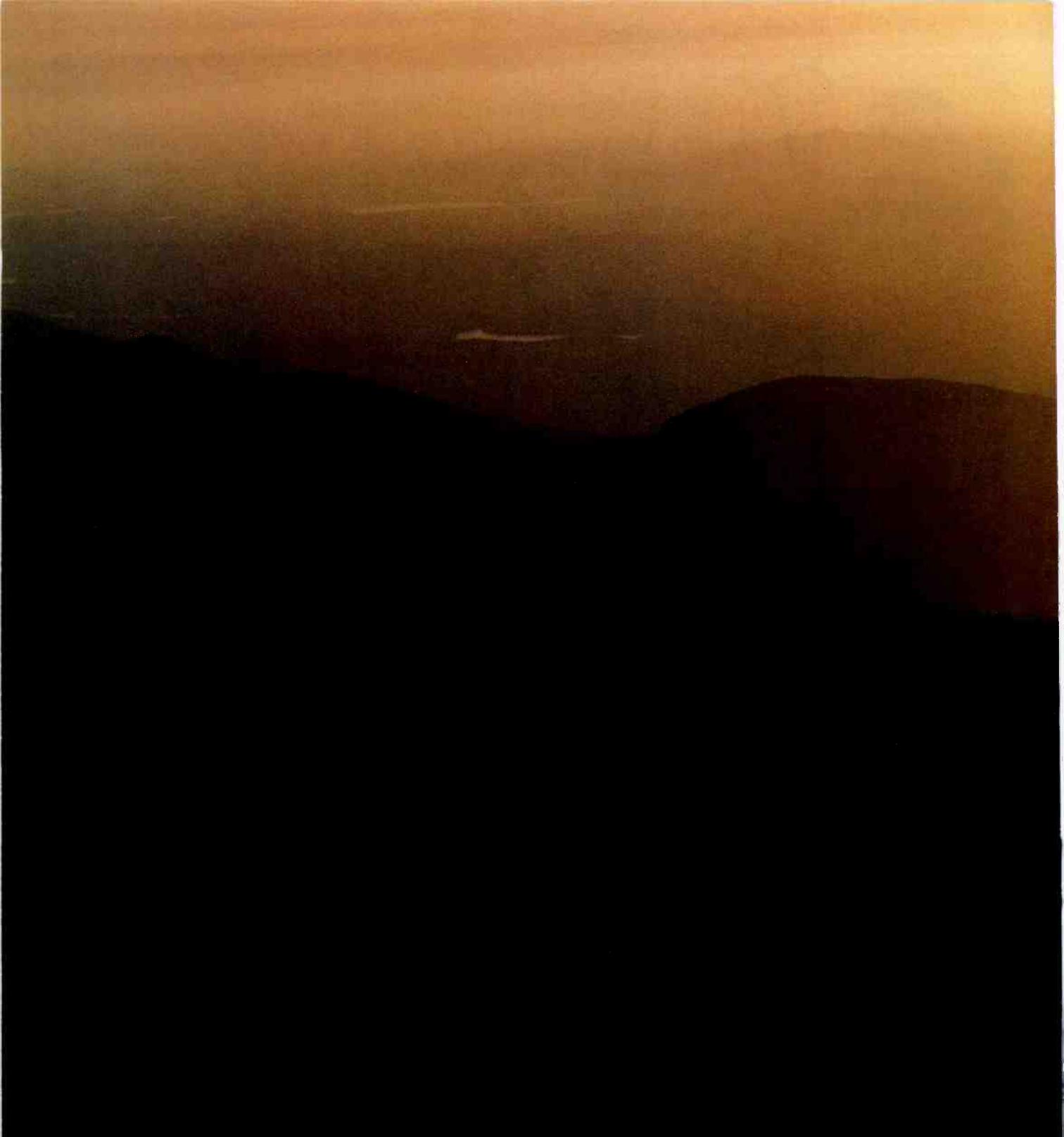
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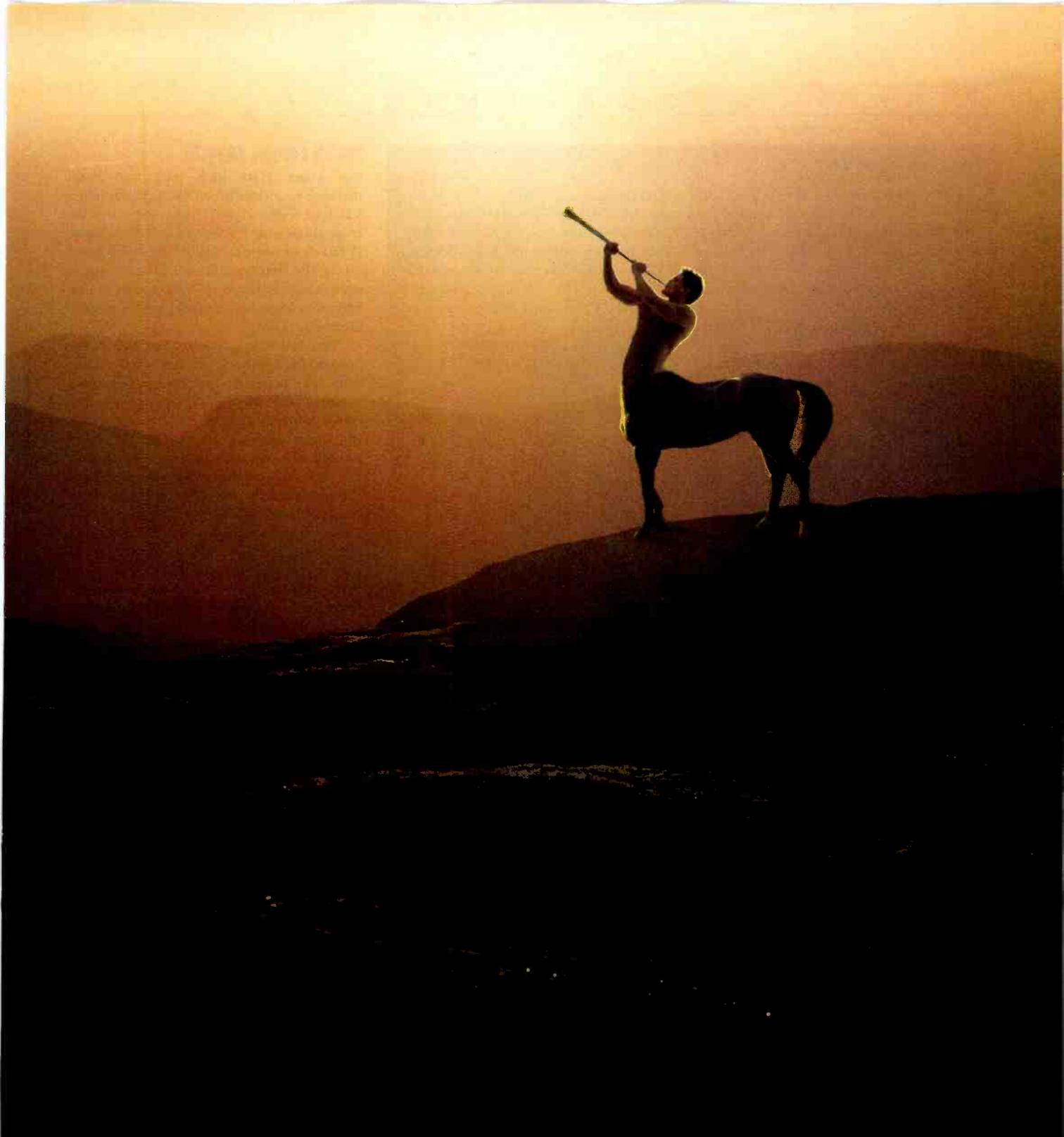


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**SANSUI RECEIVERS**

SANSUI'S TWO MIDPRICE RECEIVERS, THE S-X700 (\$310) AND S-X500 (\$250), ARE SAID TO provide the dynamic power needed for proper playback of Compact Discs. The S-X700 is rated at a nominal 40 watts (16 dBW) per channel (0.04 percent total harmonic distortion from 20 Hz to 20 kHz) but can provide as much as 70 watts (18.5 dBW) dynamic power into 8 ohms. The S-X500 is similarly rated at 25 watts, or 14 dBW (with 0.05 percent THD), and 50 watts (17 dBW) per channel. There are connections on both units for phono and CD player, with one of two tape inputs available for video sound hookup. The quartz-PLL (phase-locked loop) tuners each have 16 presets for programming any combination of FM or AM stations. Both units are finished in black. Contact Sansui Electronics Corp., 1250 Valley Brook Ave., Lyndhurst, N.J. 07071.



SANSUI'S S-X700 (TOP) AND S-X500 RECEIVERS EACH HAVE A VARIABLE LOUDNESS-COMPENSATION CONTROL.

**NOTE FROM JAPAN**

FOR SOME TIME NOW, JVC HAS BEEN marketing a videodisc system in Japan called VHD, or Video High Density. Although incompatible with Pioneer's Laserdisc format (VHD does not use a laser: Its stylus rides along the disc's surface and transduces changes in capacitance), VHD has been embraced by a number of other Japanese manufacturers.

The latest application for the home crowd is three-dimensional VHD videodiscs. The programs are recorded with two cameras (one for the left eye, one for the right), putting alternate fields from each (the cameras having recorded changes every sixtieth of a second) onto the disc master. But the silly cardboard-and-cellophane glasses normally associated with 3-D have been replaced by a new high-tech version: These contain liquid-crystal shutters that open and close alternately in one sixtieth of a second to synchronize (via a wire attached to the videodisc player) with the two images recorded by the cameras, thus creating the illusion of depth. So far, though, this technique has been plagued by a constant visible flickering.

The last word on VHD was that neither it nor 3-D VHD will come to these shores. But

# Sony just extended the range of



if 3-D does, it will certainly mean new life for a recently redeparted friend: Mr. Godzilla, it's your agent on line two!

## AKAI SURROUND-SOUND PROCESSOR

THE AS-P302 SURROUND-SOUND PROCESSOR from Akai offers both Dolby Surround (for movie soundtracks) and matrix-type processing (for extracting ambience information from music recordings). It also contains a 25-watt (14-dBW) rear-channel power amplifier and comes with a wireless handset that controls power, volume, muting, front/back and left/right balance, surround-sound mode, and AM/FM-preset selection (when used with the Akai AT-A102 tuner). In addition, the remote has three memory buttons, each holding settings for mode, balance, effect level, and volume. Connections and switching are provided for a videodisc player, two VCRs, an auxiliary audio-video source (the jacks for which are on the front panel), and an audio tape deck. Front-panel controls include balance, mode, volume, muting, and tone. Price is \$300. Write Akai America, Ltd., 800 W. Artesia Blvd., Box 6010, Compton, Calif. 90224.

(CONTINUED ON PAGE 24)

## DENON RECEIVERS

DENON'S MOST AFFORDABLE (\$300) AM/FM RECEIVER IN ITS NEW LINEUP, THE DRA-35V, shares some advanced technology with the company's series of separate components. For instance, the unit, rated at 40 watts (16 dBW) per channel, uses Denon's Non-Switching Class A circuitry, said to combine the efficiency of Class B amplifiers with the low distortion characteristics of Class A designs. The preamp section has continuously variable loudness compensation and a specified RIAA equalization accuracy of better than  $\pm 0.5$  dB. Input switching, including the receiver's two sets of video-soundtrack inputs, is performed electronically to shorten paths on the circuit board and reduce chances of noise pickup. The frequency-synthesis tuner section has 16 AM or FM presets and a choice of manual or scanned tuning.

Other Denon introductions include the DRA-55V (55 watts, or 17.4 dBW, per channel), the remote-controlled DRA-75VR (65 watts, or 18.1 dBW, per channel), and the remote-controlled DRA-95VR (85 watts, 19.3 dBW, per channel), which has a simulated-stereo circuit for video applications. The DRA-95VR also incorporates Denon's Pure Current power supply for improved performance into difficult-to-drive low-impedance speakers. Prices for the 55V, 75VR, and 95VR, respectively, are \$400, \$500, and \$600. For additional information on all of the receivers in the company's lineup, contact Denon America, Inc., 27 Law Dr., Fairfield, N.J. 07006.



DENON'S DRA-35V AM/FM RECEIVER INCLUDES THE COMPANY'S NON-SWITCHING-CLASS A CIRCUITRY.

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# A Denon amp vs. its only competition.



*Denon PMA-900V  
Integrated Amplifier*

Denon America, Inc., 27 Law Drive, Fairfield, NJ 07006  
Denon Canada, Inc., 17 Denison Street, Markham, Ont. L3R 1B5 Canada



DRA-95VR: Remote Control; Video Capability; 85 W/ch., both ch. driven, 8 Ohms, 20 Hz-20 kHz, 0.03% THD.



DRA-75VR: Remote Control; Video Capability; 65 W/ch., both ch. driven, 8 Ohms, 20 Hz-20 kHz, 0.03% THD.



DRA-55V: Non-Switching Class A Circuitry; Video Capability; 55 W/ch., both ch. driven, 8 Ohms, 20 Hz-20 kHz, 0.015% THD.



DRA-35V: Non-Switching Class A Circuitry; Video Capability; 40 W/ch., both ch. driven, 8 Ohms, 20 Hz-20 kHz, 0.05% THD.



Admittedly, it's tough to compete with Denon's integrated amplifiers. In Japan, they've been praised for "a wide balance and richness in sound" and called "nothing short of phenomenal." But now Denon amps are getting a run for their money... from the new Denon receivers.

Combining a separates-quality amplifier and tuner on the same chassis is not a new idea. But who else actually does it? Look inside the new DRA-95VR Receiver and you'll find precisely the same circuits that make Denon amps so highly acclaimed.

You'll discover the same Pure Current Power Supply for an amazing 60 dB reduction in dynamic IM distortion. You'll see the same discrete output transistors (not cheap IC "power packs") for superior sonic resolution. The same video inputs and outputs. And the same MC cartridge head amp.

Beyond even this, Denon's top two Receivers are supplied with an integrated remote control that also operates a Denon Cassette Deck and any of three Denon CD Players.

So before you make your next high fidelity purchase, get yourself to a Denon dealer. He'll show you the only receivers with the guts to stand up to the world's finest integrated amps.

**DENON**  
DESIGN INTEGRITY

Denon DRA-95VR  
AM/FM Receiver

## TAKING ON BIG BROTHER

MORE AND MORE MOVIES ON VIDEOTAPE ARE getting the Macrovision copy-guard treatment, which prevents their unlawful duplication. The issue of private copying of copyrighted video materials is unsettled at best (it has already been through the courts and may be taken up by Congress) and is complicated by complaints that the Macrovision technique makes the tapes unplayable on certain television sets.

A device from DT Electronics International is said to remove all interference that might arise from such copy-guarding. The "Copyguard Killer" includes a set of video inputs and outputs, an RF output for connection to a standard TV, a vertical stabilizer circuit, and two picture controls: an image enhancer for sharpening the overall picture and a noise eliminator to reduce "snow" caused by the sharpening. The manufacturer specifically warns that this device is *not* intended to facilitate duplication of copyrighted materials but only "to improve home viewing." This disclaimer has not dampened the ire of concerned software makers. Price is set at \$230. Additional information can be obtained by writing DT Electronics International Corp., 100 E. 12th St., New York, N.Y. 10003.

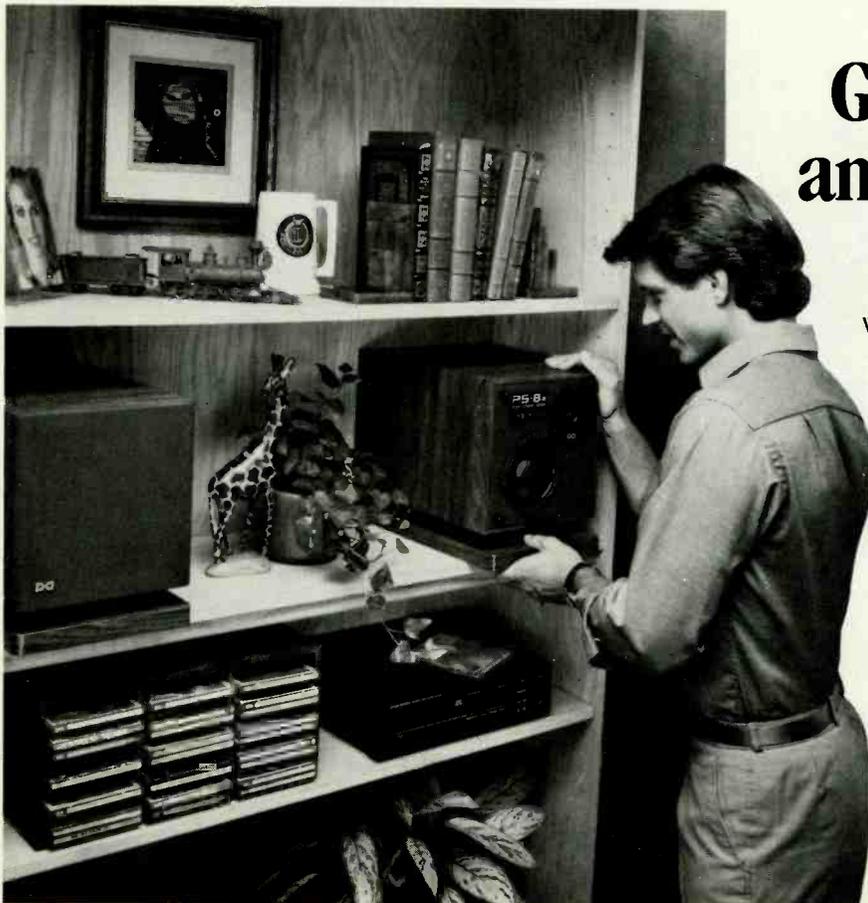
## UNUSUAL SPEAKER DESIGN

TENNESSEE SOUND HAS TAKEN A DECIDEDLY different approach to controlling speaker distortion caused by deformation in the center region of the woofer cone. The company's first product, the Symphony I loudspeaker system, uses a damper pad placed in front of the woofer that is said to absorb this distortion before it can be heard. The cleaner sound that emanates from the outer edge of the woofer is not obstructed by the damper pad.

Each speaker contains a 6½-inch woofer and a tweeter (type and size are not specified), both rear-loaded, with the tweeter occupying a separate pod on top of the main cabinet. A pair of curved reflector panels is mounted at either side of each driver in a winglike fashion to re-radiate the sound into the listening area. The speakers are designed to be placed near a wall in the room. According to the company, sound in the critical high-frequency range is dispersed over a wide angle to increase the effective listening area. Power requirements are given as 35 to 250 watts (15.4 to 23.9 dBW) per

channel, and impedance is at a claimed minimum of 8.5 ohms at any frequency.

The "bookshelf" Symphony I speakers are formed of solid hardwood and can be obtained in a choice of lacquered finishes for \$550 per pair. Floor stands and wall-mounting brackets are optional. For more details on this speaker system, contact Tennessee Sound Co., P.O. Box 1252, Bristol, Tenn. 37621.



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**AUDIO SYSTEMS**

**BIG BASS**

MY SPEAKERS ARE PLACED ABOUT SIX FEET apart against a common wall. I have noticed that when I stand close to (and between) the speakers, the low bass is good. When I back away into the center of the room, the bass response increases (becomes very good). When I back further away and stand against the opposite wall, the bass is incredible (I can feel it). Why is this so, and how can I get the bass response in the center of the room to be as spectacular as what I hear when I stand against the opposite wall?

Gary C. Powell

East Orange, N.J.

What you're hearing is the room's influence on the sound. Localized peaks and dips occur at all frequencies, but they are apparent only at the bottom of the range, where wavelengths are large (many feet) relative to the size of a typical room. (At high frequencies, the variations are so closely spaced that the sound field is perceived as being continuous.) One of the most obvious effects is that proximity to room boundaries—floor, walls, ceiling—emphasizes bass. This is why speakers usually sound "warmer" when placed on the floor or against a wall than they do on a stand in the middle of the room. The same thing happens when you move close to a wall; if you were to stand in a corner, you probably would be even more impressed.

Low-frequency boost from your equalizer would enhance the bass in the middle of the room, but you still might not be able to get the sound you're looking for. And you run the risk of overloading your amplifier in the effort. A better approach would be to combine equalization with some adjustment of your listening position toward the front or back wall or of the speakers toward the floor or side walls. You might also consider whether you really want such bass-heavy reproduction. What sounds spectacular on first listen can sometimes wear thin over time.

**CD RUMBLE**

I HAVE A PROBLEM WITH SEVERAL RECENT Compact Discs that is driving me up the wall. During playback, through my M&K subwoofer and satellites, I can hear a low-pitched rumbling sound that is quite noticeable even when the music is at moderate levels. Is this simply background noise picked up in the recording process and accentuated by the subwoofer, and if so, what can I do about it?

Richard B. McLaughlin

Salinas, Calif.

You are probably hearing "room rumble": very-low-frequency noise picked up by the microphones at the recording session. (CDs can have much flatter deep-bass response than LPs, which often are rolled off at the very bottom to minimize cutting problems.) It can be created by all sorts of things, including air-conditioning equipment, outside traf-

fic, and so forth. You could try to attenuate the rumble with an equalizer or tone controls, or you might find that a slight repositioning of the bass unit will solve, or at least reduce, the problem.

However, the level of the noise suggests that you may have your subwoofer turned up too high. There's a quick and dirty test for this that you can use if the crossover between satellites and subwoofer is down around 100 Hz or below. While playing a disc containing low-bass passages, switch the subwoofer in and out of the system. If you hear a dramatic change in tonal balance, you probably should adjust the subwoofer level to minimize it. The proper function of a subwoofer is to extend response down to the lowest frequencies—not to bump up the entire bass range.

**CARTRIDGE QUERY**

WHAT SPECIFICATIONS SHOULD I LOOK FOR TO know whether an induced-magnet or moving-coil phono cartridge will need a transformer or other type of step-up device to achieve adequate output? Also, is there any evidence that the small brushes used on some phono cartridges can damage records or increase surface noise?

Francis O. Menay

Yauco, P.R.

As far as we know, the effects of such brushes are entirely beneficial, and we can't think of any reason why they wouldn't be. Induced-magnet cartridges have outputs comparable to those of moving-magnet pickups and normally do not require any additional step-up device ahead of the phono preamp. "High-output" moving-coil cartridges also can do without extra gain. Only low-output moving-coil pickups—which we would define as those producing less than 0.5 millivolt per centimeter per second (mV/cm/sec)—require a transformer or pre-preamp.

**LONG LINES**

WHAT IS THE MAXIMUM USABLE LENGTH OF cables carrying line-level audio signals between components? For example, if my TV receiver and VCR are 25 to 30 feet away from my audio system, can I run a standard audio cable from one to the other without appreciable loss of frequency response or increased noise? The cable itself would have to be about 40 feet long (down through the floor and back up again at the other end).

Robert J. Richard

Fairfax, Calif.

The effect on frequency response will depend on the input impedance of the device accepting the signal, the output impedance of the component sending it, and the capacitance of the cable. Input impedances should be high (preferably 20,000 ohms or greater), output impedances low (preferably no more than 1,000 ohms or so). Cable capacitance also should be low, but that may be difficult to determine. Most ordinary audio interconnect

cable is 30 to 40 picofarads (pF) per foot, which is quite reasonable. (Special audiophile cables are not necessarily better in this regard, by the way.) So you're talking about approximately 1,400 picofarads total. Unless there's something unusual about the input and output impedances of your equipment, that should be fine as regards frequency response.

Noise pickup is harder to figure. Your chances of getting radio-frequency interference (RFI) are greater with long cable runs than with short ones, but it's difficult to be any less vague than that on the subject without much more detailed knowledge of your setup. If you do develop RFI problems, you may be able to eliminate them simply by reorienting the cable slightly or putting some loops in it.

**SPEAKERS ON THEIR SIDES**

TIMOTHY HOLL'S ARTICLE ON IMPROVING room acoustics (June) overlooks a consideration I believe to be important for "bookshelf" loudspeakers, which often are placed horizontally rather than vertically. (All of your pictures of speakers show them with their drivers arrayed vertically.) What effect does horizontal mounting have on sound dispersion, stereo imaging, and so forth?

Carl F. Mansfield

San Luis Obispo, Calif.

In most cases, there is interference between driver outputs in the crossover region, causing some irregularity in the speaker's radiation pattern. This disturbance normally is most pronounced along the common axis of the two drivers. Consequently, it usually is best for the drivers to be oriented vertically, since this will result in the least disturbance of the stereo image as your head moves from side to side. However, you may hear the tonal balance change as your head moves vertically, as in standing or sitting.

**DIGITAL FILTERS**

I AM THINKING OF GETTING A PIONEER PD-M6 Compact Disc changer, which can hold as many as six CDs at a time. But it doesn't have digital filters. The company's PD-9010X does use digital filtering, but it can accommodate discs only one at a time. How important is it to have digital filtering in a CD player?

Jerome H. Askanas

Philadelphia, Pa.

It's not important at all. The key question is performance, not how it is achieved. Good analog filters can work every bit as well as the digital variety and will not sound any different. In general, digital filtering has been an oversold feature. Its two principal advantages—phase linearity and potentially flatter response—are not audible in practice compared with good analog filters.

*We regret that the volume of reader mail is too great for us to answer all questions individually.*

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## DIGITAL HEGEMONY

ONE BY ONE, AND FOR NO PARTICULARLY GOOD reason, leading executives of the world's largest record companies seem to be arraying themselves against the introduction of the rotary-head digital audio tape (RDAT) system—indeed, against any form of home digital-audio recording. As reported in the July 26 issue of *Billboard*, for example, Jan Timmer, president of corporate management at Polygram International, “condemned the Japanese hardware industry’s ‘arrogance and irresponsibility,’ accusing it of ‘cultural vandalism.’” You’d think he was afraid of the Yellow Peril, but he is just concerned with the possibility that RDAT will be successful.

Timmer and others claim that RDAT, with its high-quality dubbing capability, will be detrimental to musicians. I believe that ultimately the opposite will be true. RDAT will, for the first time, allow any artist to enter the digital-audio era without having to use an unreasonably expensive professional digital recording system. Creativity and musical variety will be spurred, not inhibited, by the availability of another music recording and distribution medium. Besides, the suffering-artist argument will—or should—become moot if the recording industry obtains its long-awaited recording tax. Perhaps the large record companies feel threatened by the greater independence RDAT may give small labels. (If Congress does impose a tape surcharge, I’d like to see it give *all* collected moneys to the National Endowment for the Arts. Even I would be willing to pay in that case.)

For all his rhetoric about shielding artists from the depredations of RDAT, Timmer may be trying to protect something else. *Prerecorded RDAT cassettes may be much easier to produce than Compact Discs*, and Polygram has made the largest and most costly investment in CD pressing facilities in the world. If RDAT catches on in a big way, that investment will be threatened long before it is amortized.

Software manufacturing has always been the Achilles’ heel of the CD system. From the start, CD pressing has involved massive applications of expensive high technology, with not-always-favorable results. This is likely to continue in the foreseeable future. Unofficial reports of low production yields (less than 80 percent) and tales of misleadingly optimistic official yield figures still abound. It even took Polygram about two years after the introduction of the system to confidently produce CDs with playing times of more than about an hour (the Japanese were doing this almost from the outset). With RDAT, such problems may not arise.

If a high-speed RDAT duplication process were perfected—and that’s a very crucial *if*—a prerecorded RDAT would cost much less to manufacture (and, one hopes, to purchase) than a CD. For example, the Sony contact-printing RDAT-dubbing system described in September’s “Currents” makes copies at about 270 times the normal RDAT playing speed: Dubbing a 75-minute RDAT cassette (equivalent to a

maximum-length CD) takes about 17 seconds. Even if an additional ten seconds needed to be added for packing the tape into an RDAT housing—and it would probably take less time in practice—this still would be faster than Polygram’s CD pressing cycle, which, when I measured it several years ago, lasted about 30 seconds (other CD plants have similar timings). A bank of RDAT dubbers could easily out-produce an equal number of CD presses with equivalent and probably superior yields.

Once an RDAT copy is loaded into its shell, it is finished! There are no subsequent aluminum-deposition, lacquer-coating, or disc-by-disc defect-inspection procedures, as in the CD system. Gone are extensive clean-room facilities, expensive laser-based disc cutters, and tricky chemical-development and plating steps in the mastering process. Costs for energy, raw materials, industrial plant, packaging, shipping, and labor will be lower. High-speed RDAT duplication may eventually approach the blessed condition of automated analog cassette duplication, in which, to paraphrase a representative of the CBS Technology Center, plastic is poured in at one end and finished tapes emerge from the other.

RDAT’s consumer benefits will undoubtedly be covered in numbing thoroughness once the system is unleashed, so I need not detail them all here. Suffice it to say that on most counts other than long-term durability and speed of access, RDAT will be fully the CD’s equivalent—and in a few areas, its superior. For example, a prerecorded RDAT theoretically has the same audio performance as a CD, since it uses the same sampling rate and quantization resolution. An RDAT cassette’s capacity for nonaudio subcode data and its subcode data rate are greater than those of a CD, so any advanced CD feature not requiring nearly instantaneous access (such as a display of lyrics) will also be feasible with RDAT. A prerecorded RDAT will be able to play for a maximum of 120 minutes, 45 more than a CD offers. An RDAT deck will be far more immune to external vibrations than a CD player is: Witness the stability of 8mm camcorder tapes, which are recorded on mechanisms similar to those used for RDAT. Digital audio may finally catch on in the car.

Polygram has reason to be upset. Abandoning the construction of CD pressing plants in favor of lower-cost RDAT duplication could perpetuate the industry-stifling CD shortage and preserve today’s equally detrimental CD prices. On the other hand, RDAT’s initially higher cost and unfamiliar technology will do more to slow the growth of the system than all the rantings of music-industry executives. For their part, the Japanese and many small record companies sensibly see RDAT as simply another medium for music. When all is said and done, the music industry’s avowed purpose is to sell “product.” It should hardly matter whether the goods come out on LPs, 45s, cassettes, CDs, videodiscs, or RDATs, as long as somebody is willing to pay for them. ■



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*Report preparation supervised by Michael Riggs, David Ranada, Christopher J. Esse, Robert Long, and Edward J. Foster. Laboratory data (unless otherwise indicated) is supplied by Diversified Science Laboratories.*

**Polk's Stereo Dimensional Array loudspeakers have been stirring audiophile interest for a few years now. This month we review the latest model in the line's Signature Reference Series, the SDA SRS/2. Report follows. ►**



NICK BASILION

**B&W Matrix 2 Loudspeaker**



**KEF 107 Loudspeaker**



**Dali 7 Loudspeaker**



**Acoustic Research Connoisseur 40 Loudspeaker**



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**DIMENSIONS:** 20 1/4" BY 50 1/4" INCHES (FRONT), 12 1/2" INCHES DEEP PLUS CLEARANCE FOR CONNECTIONS. **PRICE:** \$1,990 PER PAIR. **WARRANTY:** "LIMITED," FIVE YEARS PARTS AND LABOR. **MANUFACTURER:** POLK AUDIO, INC., 5601 METRO DR., BALTIMORE, MD. 21215.

**A**LITTLE MORE THAN A YEAR AGO, POLK introduced a refinement of its SDA (Stereo Dimensional Array) technology in the form of the SRS (Signature Reference Series) loudspeaker (see "Currents," August 1985). Although a definite step forward, the SRS was, and is, a very big loudspeaker, making a visual statement as large as its sonic one. The company has now accommodated those audiophiles desiring the advantages of the original SRS in a less costly and, perhaps more significantly, less imposing package.

This is not to say that the SRS/2 is small, however. It, too, is a floor-standing model and carries a complement of two 1-inch dome tweeters, four 6 1/2-inch low-frequency drivers, and a 15-inch passive radiator. The basic principles underlying the speaker's design are the same ones behind the original SDAs. We discussed those extensively in our reviews of the SDA-1 (January 1983) and the SDA-2 (June 1984), so we won't belabor them here.

Briefly, all the SDA speakers are designed to overcome a phenomenon known as interaural crosstalk. Ideally, each ear would hear only the output from the speaker nearest to it: left speaker to left ear, right speaker to right ear. In conventional stereo reproduction, however, there is considerable "leakage." For example, the right ear hears the signal from the right speaker, followed a fraction of a millisecond later by the signal from the left. That tiny delay enables the proper signal to dominate, but there is still some constriction of the stereo image.

The problem can be overcome by using an extra set of signals to cancel the crosstalk at the listener's ears. In the SDAs, these cancellation signals are delivered by an extra set of drivers placed toward the outside edge of the front baffle, approximately the width of a human head from the main drivers on the opposite side of the panel. The two speakers are linked together by a cable so that their crossover networks can derive the necessary "dimensional" signals, as Polk calls them.

At the heart of the SRS models are two improvements to this basic scheme. The first (now incorporated in the rest of the SDA line

as well) is a restriction of the dimensional signal to frequencies below 1 kHz. Polk says that it chose this limit because the band between 200 Hz and 1 kHz contains 95 percent of the information we use for localization. At higher frequencies, the wavelengths are too short relative to the distance between the ears to provide useful cues; reverting to ordinary stereo there helps forestall any tendency to "phasiness" or diffuseness in the image and makes the listening position less critical.

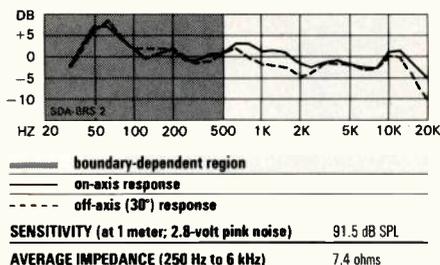
What sets the SRS speakers entirely apart from the rest of the SDA line is their use of driver arrays to control vertical dispersion. To minimize tonal coloration and image distortion, it is desirable that early reflections be minimized, yielding a very pure first-arrival signal from the speakers. But this is difficult to achieve with conventional speakers, which typically are mounted with their drivers relatively close to the floor (within a few feet). Polk's solution is to stack matching drivers to create three vertical line sources: a main low-frequency array, a dimensional low-frequency array, and a tweeter array. Acoustically, they behave like single drivers that are tall and thin, giving wide dispersion horizontally while narrowing it somewhat vertically. This reduces the amount of radiation toward the floor and ceiling without adversely affecting the horizontal listening window. (To prevent excessive beaming in the high treble, the signal is gradually shifted from two tweeters to one as the frequency increases.)

As we've noted in our previous reports on SDA speakers, they are not easy to test. Since they are designed to work together in pairs and will not function properly if disconnected from each other, it is impossible to measure one strictly apart from the other. Our response curves, for example, were made with the two speakers placed side by side against the wall behind them and driven by a mono signal. Other configurations and test signals give different results. In other words, though the published response curves correlate pretty well with what we hear from these speakers, they are nowhere near the whole story.

Another distinguishing feature of SDA speakers is their impedance, which varies not only with frequency but also according to the characteristics of the drive signal. With a mono signal (used to obtain the aver-



ROOM RESPONSE CHARACTERISTICS



age impedance shown in our data column), the SRS/2's impedance peaks somewhere below 20 Hz, dips to 3.6 ohms at 25 Hz, rises to a second resonant peak of 9 ohms at 50 Hz, then drops to a low of 3.3 ohms before sloping gradually up to a maximum of 11.3 ohms at 20 kHz. The impedance curve with a single-channel signal is similar except for a broad trough in the range covered by the dimensional arrays, reaching a minimum of 2 ohms at 350 Hz, with a wideband average of

just 4 to 5 ohms. This is caused by the dimensional array of the opposite speaker working essentially in parallel with the main array of the "driven" speaker. Most of the time, the impedance will be somewhere between these two extremes.

Because the impedance is so low in a range where much musical energy is concentrated, this load probably will be trouble for some amplifiers, and we certainly would not recommend operating another pair of speakers in parallel with a set of SRS/2s. Best results will be obtained with an amplifier designed to deliver high currents into low-impedance (2 ohms or less), reactive loads.

Diversified Science Laboratories measured sensitivity and distortion from a single speaker (moving the other as far away as possible without disconnecting it) reproducing mono test signals. Both are impressive. Sensitivity is on the high side of average, and distortion (dominated by the second har-

monic) is notably low through the midrange and treble—well below 0.5 percent at moderate drive levels and seldom breaching that mark even at high levels. From 100 Hz down, total harmonic distortion is 1 percent or more at 85 dB SPL (moderately loud) and is several percent higher at 95 and 100 dB SPL, which are our highest test levels. Nonetheless, these are very good results, and we did not detect any signs of distortion in our listening.

We used the speakers in essentially the same position that DSL employed for its tests (and that Polk recommends): against the wall behind them but away from any side walls. The first thing that struck us about the sound was its smoothness relative to that of the earlier SDA speakers we had tested. We did not detect any sign of roughness or harshness. Indeed, the reproduction tends to be on the warm side of neutral: a little fat in the middle and upper bass. Low-frequency extension is, as you would expect from a

speaker of this size, very good.

As with the other SDAs, the SRS/2's hole card is its imaging, which is quite different from that of any other speaker we know. It gives a remarkable sense of bigness and solidity, and with the right material, it is capable of quite spectacular feats. Instruments may, for example, be localized well outside the area between the speakers, and the sense of depth often is enhanced. On some souped-up pop material, the effects can be almost surreal.

Polk's goal in developing the SRS series was to achieve these qualities while retaining as great a sense of overall naturalness as possible. (The original SDA-1 could at times sound a little gimmicky, and each succeeding generation of SDA speakers has marked a significant improvement in this regard.) The result is the best SDA speaker we've reviewed to date. Even if they're too rich (or big) for your blood, we recommend that you take the time to give them a listen. ■

## T E S T R E P O R T S

# B&W Matrix 2 Loudspeaker



DIMENSIONS: 10 $\frac{1}{2}$ " BY 23 $\frac{1}{2}$ " INCHES (FRONT), 12 $\frac{3}{4}$ " INCHES DEEP; 36 INCHES HIGH ON ACCESSORY STANDS. PRICE: \$1,398 PER PAIR; ACCESSORY STANDS, \$229 PER PAIR. WARRANTY: "LIMITED," FIVE YEARS PARTS AND LABOR. MANUFACTURER: B&W LOUDSPEAKERS, LTD., ENGLAND; U.S. DISTRIBUTOR: ANGLO AMERICAN AUDIO, P.O. BOX 653, BUFFALO, N.Y. 14240.

**T**HAT B&W IS A CLASS ACT AMONG SPEAKER manufacturers should come as no surprise to any regular reader. In radical technology and extravagant attention to detail, B&W has been demonstrating for some years that it need not make apology to anyone. Both technology and detail are the keynotes of its newest line, the Matrix Series, built around a unique quasi-honeycomb enclosure-construction scheme designed to make a yet closer approach to a goal that B&W has shared with other top manufacturers for decades: an ideal loudspeaker cabinet, one so "dead" that acoustic energy is radiated from the drivers alone.

The search for such a construction is something of a British tradition. When the fabled G. A. Briggs was designing systems for Wharfedale (still called Wharfedale Wireless Works during his tenure, following World War II), he filled enclosure cavities with sand to that end. The results were enormously heavy, but panel vibration was significantly damped by contrast with the then-

standard plywood box with internal struts and bats of glass wool. B&W itself experimented with acoustically dead plastic forms in the tweeter-midrange "head" of the Model 801 monitor (test report, October 1980).

The Matrix construction, invented by Laurence Dickie, B&W's chief electronics engineer, is built out of thin, interlocking panels (made of a composite wood material not unlike Masonite) assembled into a honeycomblike structure. This in turn is slid into grooves cut into the inside of the cabinet, thus stiffening it with essentially continuous cross bracing. The openings in the honeycomb are then filled with bars of acoustic foam to absorb acoustic energy. The result is claimed to be a total structure that will store and reradiate less acoustic energy than any competing construction. And it is this stored energy that is believed to color the overall sound of loudspeakers.

There are three models in the series so far. The Matrix 1 is a small two-way system intended for bookshelf use or mounting on a floor stand; the Matrix 3 is a floor-standing model in which one woofer handles only deep bass while a second handles the mid-bass (making it a sort of two-and-a-half-way system). We chose the middle model—somewhat larger than the Matrix 1 but still a conventional two-way system intended for

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To begin with, the K-1020 has a specially designed closed-loop dual-capstan transport system. There's one capstan on either side of the record and playback heads. This insures that the tape is always in optimum contact for exceptional frequency response and low wow and flutter. And separate reel and capstan motors insure that the tape drive stays isolated from the reel operation for increased reliability and reduced modulation distortion.

Each of the three heads in the K-1020 is specifically designed to maximize its performance. The pure Sendust record head has a 2-micron gap for precise signal recording. The pure Sendust playback head has a 0.7-micron gap for accurate reproduction as high as 23 kHz. And the double-gap erase head has an ion-plated 0.3-micron glass coating to insure that it erases even difficult metal tape formulations completely.

To set the correct bias for not only different

tape formulations, but each individual tape, the K-1020 has an Optimum Record Bias Tuning system. Just press the TEST button and adjust the bias control until the ORBiT tuning indicator shows you the bias is precisely set. Then to prevent saturation, use the variable O-VU recording level indicators to set the level for each tape formulation/noise reduction combination.

Of course, a deck as advanced as the K-1020 gives you a choice of Dolby\* B and C as well as dbx\*\* noise reduction. Plus full-time Dolby HX Pro\* to increase headroom by as much as 8db at 20 kHz. Along with a full complement of convenience features including a four-digit real-time counter with auto memory.

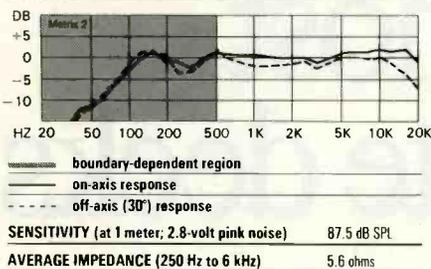
And the K-1020 is just one in a complete line of new Yamaha cassette decks. Because history has a way of repeating itself.

K-1020 shown with Yamaha YHD-1 Orthodynamic Headphones  
\*Dolby and Dolby HX Pro are trademarks of Dolby Laboratories  
\*\*dbx is a trademark of dbx, Inc.

Yamaha Electronics Corporation, USA, P.O. Box 6660, Buena Park, CA 90622



#### ROOM RESPONSE CHARACTERISTICS



use on a stand.

The Matrix 2 itself is available in four wood-veneer finishes: walnut, black ash, natural oak, and rosewood. (A high-gloss lacquer can be specially ordered, in a choice of colors.) The stretch grille is mounted on a low-diffraction fiberboard panel with metal trim around the edge. Behind it, near the center of the front panel, is an approximately 8-inch bass/midrange driver with a homopolymer polypropylene cone diaphragm. Immediately above it is a 1-inch tweeter with a polyamide dome diaphragm and a ferrofluid-filled voice-coil gap. The two speakers as a pair are matched for frequency response, as are all Matrix speakers. There are no controls. Connections are made to banana jacks mounted in a shallow recess at the bottom of the back panel. B&W supplies gold-plated banana-plug adapters that easily and positively grip bared wire leads.

The stands we received, unassembled, may not be identical to those that will be available by the time you read this. The ones we got have black marble bases mounted on black-painted plywood. Four square black metal legs, filled with some sort of acoustic damping, are screwed to each base and support a metal top plate on which the speaker sits. Accessory spike feet can be screwed into the plywood underlay to supply a better floor "grip," if you choose.

The unusually detailed (and utterly liter-

ate) manual that comes with the speakers ducks the question of exact recommended placement, contenting itself with repeating the standard truisms about bass propagation and proximity to room boundaries. Diversified Science Laboratories chose to place the speakers 36 inches from the back wall; most of our listening tests were conducted with them even farther out in the room. These placements tend to help stereo imaging by avoiding early reflections but also minimize bass support from those reflections.

Measured this way, the on-axis frequency-response curve is extremely flat ( $\pm 1.5$  dB, we'd say) from the top of the bass rise to the top of the audio band, excepting only the moderate midrange dip (2.5 dB maximum, relative to average response in the so-called music band) centered on approximately 300 Hz that presumably is a result of floor-reflection cancellation of the direct radiation. This dip is a little narrower and a little deeper in the off-axis measurement, which also displays a slight (1- to 2-dB) dip in the upper midrange (centered a little above 1 kHz). The latter could be evidence of minor beaming at the top of the woofer's range; DSL's near-field measurements suggest a crossover frequency near 2.5 kHz. Nothing suggesting tweeter beaming appears until the very top of the audio band. At the bottom, the curves roll off below 100 Hz, precisely as B&W's specs and response curves predict.

It is tempting to view such a curve as a near ideal match to that of a separate subwoofer, crossed over at 100 Hz, and we have no doubt that some owners will want to use the Matrix 2s that way—or to move them closer to the back wall in search of some bass reinforcement. But the sound is so excellently balanced that, even with the speakers well out in the listening room, we almost never felt an impulse to add a more substantial very-low-frequency underpinning in our listening tests, even in the big-orchestra pieces. Admittedly, however, more could be made of such music if extra-clean deeper

bass were available.

Measured total harmonic distortion is not particularly low overall. At the minimum test level of 85 dB SPL (sound pressure level), it averages almost  $\frac{1}{2}$  percent from 100 Hz up. The figures increase with level, as usual, reaching an average of about 2 percent in this range for the highest test level (100 dB SPL). These figures certainly aren't out of line, but they do prove the obvious: Distortion figures alone tell you little about speaker coloration. Here, the figures are higher than average, though the audible coloration is much lower than average—as you might expect from the Matrix construction.

The Matrix 2's impedance curve is really remarkable: It is one of the most uniform of any speaker we have ever tested. There are several minima of just over 5 ohms, the lowest (at around 150 Hz) measuring 5.2 ohms. The absolute maximum within the audio band (at 20 kHz) measures only 1.8 ohms higher! And the flat impedance curve implies relatively constant phase relationships between current and voltage in the power it draws from the amp. (The manual may be unique among those for models we've tested in that it specifies relative phase angle: 5 degrees maximum.) All of this means that the Matrix 2 should be an exceptionally easy load for any amplifier to drive, even if speaker pairs are hooked up in parallel, thanks to its unusual crossover design. That crossover also includes self-resetting overload protection, by the way.

Imaging, too, is distinctly above average and may be taken as yet more evidence of the design's effectiveness, since stored acoustic energy can disturb phase relationships as well as sonic color. In fact, in every way in which we can assess the Matrix construction principle, it seems to have contributed significantly and positively to the Matrix 2's decidedly neutral sound quality. We eagerly look forward to more speakers using the Matrix techniques and heartily commend the one we've already tested. ■

#### T E S T R E P O R T S

## KEF 107 Loudspeaker

DIMENSIONS: SPEAKER, 46 BY 13 INCHES (FRONT), 17 $\frac{1}{4}$  INCHES DEEP PLUS CLEARANCE FOR CONNECTIONS; KUBE EQUALIZER, 2 $\frac{1}{2}$  BY 6 $\frac{1}{2}$  INCHES (FRONT), 8 $\frac{1}{4}$  INCHES DEEP PLUS CLEARANCE FOR CONNECTIONS. PRICE: \$3,900 PER MATCHED PAIR WITH KUBE. MANUFACTURER: KEF ELECTRONICS LTD., ENGLAND; U.S. DISTRIBUTOR: KEF ELECTRONICS OF AMERICA, INC., 14120-K SULLYFIELD CIR., CHANTILLY, VA. 22021.

**D**ENUDED OF ITS GRILLE ASSEMBLY, THE KEF 107 resembles a hybrid of two previous KEF flagship models. It has the columnar shape (and Coupled Cavity bass-driver arrangement) of the 104/2 sitting beneath a phase-aligned, antidiffraction-shaped, swiveling tweeter/midrange

"head" similar to the one first introduced in the 105 (test reports, November 1985 and July 1979). That it sounds better than we remember those already extraordinary speakers is due at least in part to the use of an outboard active equalizer called the Kube.

(CONTINUED ON PAGE 43)

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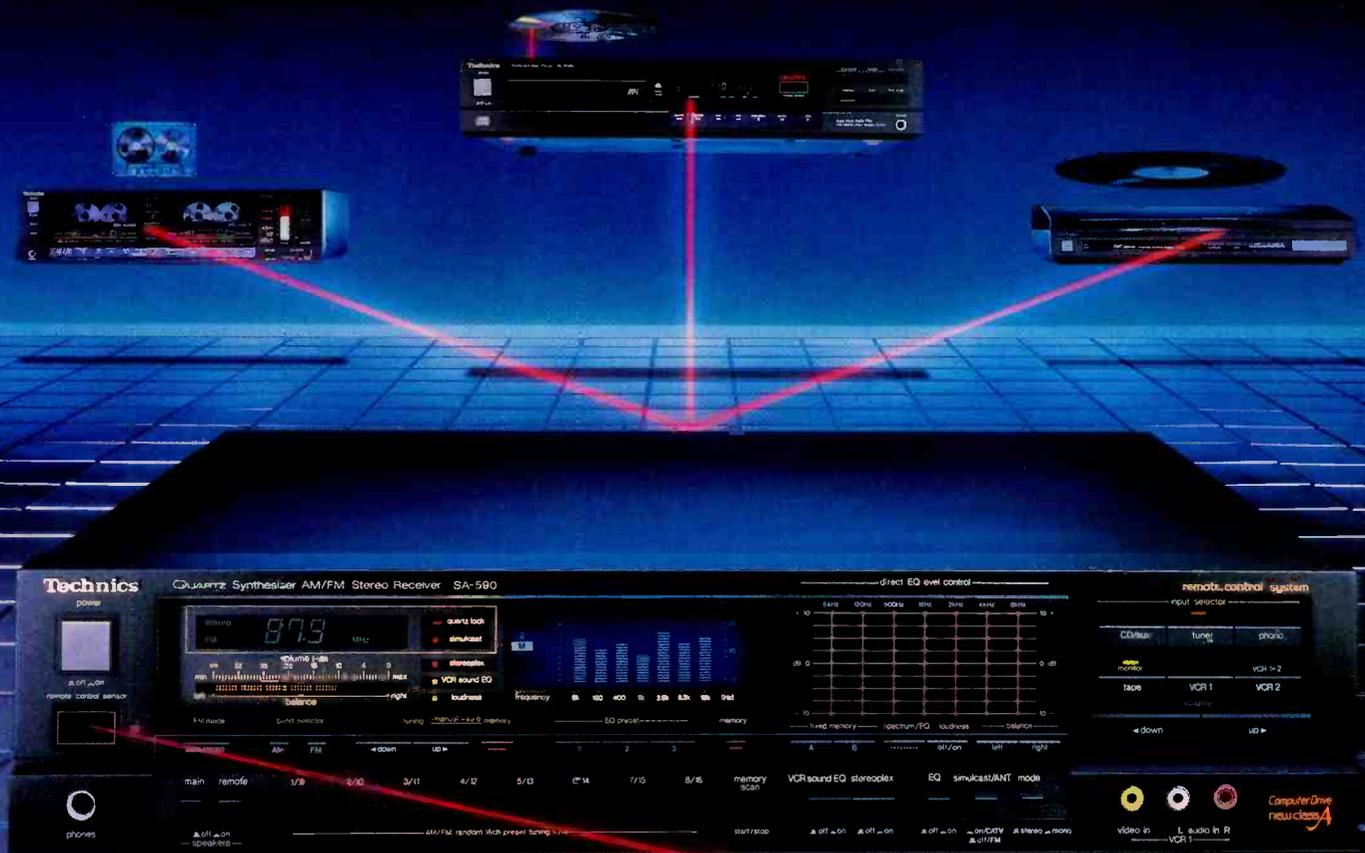
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\*100 Watts/ch., continuous RMS, both ch. driven, 8 Ohms, 20 Hz-20 kHz, 0.02% THD.

(CONTINUED FROM PAGE 40)

Its name originally standing for KEF Universal Bass Equaliser, the Kube is an especially unusual device for a British speaker maker. One often gets the impression from some British manufacturers and audio critics that active response tailoring via outboard equalizers or even tone controls is a colonial aberration inappropriate for the truly civilised (with an *s*) loudspeaker. That may be an apt description for some systems but not for the 107: The Kube is an integral part of the speaker design. As KEF puts it in the well-written and very complete owner's manual, the Kube "contains important equalisation and unit pair matching elements. Model 107 will only operate correctly therefore with Kube in circuit." The Kube is hooked into a tape-monitor loop or between preamplifier and power amplifier via its attached cables terminated with gold-plated pin plugs. Since the cables are only about two feet long and are wired into the Kube, make sure your system can accommodate the device in close proximity to your central amplifier, or be prepared to buy some extension cords.

The Kube performs some uncommon functions. Most mundane is the fixed equalization providing midrange and high-frequency response shaping and sensitivity matching between the two loudspeakers in a system. The matches, says KEF, are to better than 0.5 dB. Less run-of-the-mill is the fact that the applied equalization is unique to the specific pair of speakers the Kube comes with; Kubes are not interchangeable between 107 systems. The fixed equalization for the pair tested by Diversified Science Laboratories consists primarily of a broadband response dip of about 3 dB (relative to 1 kHz) centered at approximately 2.25 kHz and a dip in response at about 35 Hz. The latter varies in depth according to the setting of the much more novel Kube controls.

Those controls "allow you to optimise low-frequency performance to suit both listening environment and programme material." The three knobs are labeled **CONTOUR** (for controlling low- to mid-frequency balance), **EXTENSION** (to change the speaker's low-frequency cutoff), and **Q-FACTOR** (which adjusts speaker damping). For best results, KEF recommends the controls be set in that order so as not "to end up with a confused and incorrect result."

**CONTOUR** is supposed to optimize the 107 for your listening room and preferred sound balance. It raises or lowers the frequencies below about 160 Hz by approximately 3 dB and is set, as are the other two controls, by ear while listening to a record with extended bass material. DSL confirmed this behavior, with the added datum that the range of variation increases at lower frequencies. At 160 Hz, for example, the maximum contour setting produced a boost of about 0.5 dB, and the minimum setting a cut of 2.5 dB (relative to the marked zero setting). At 20 Hz, the maximum boost was

about 2 dB; the maximum cut, 4 dB.

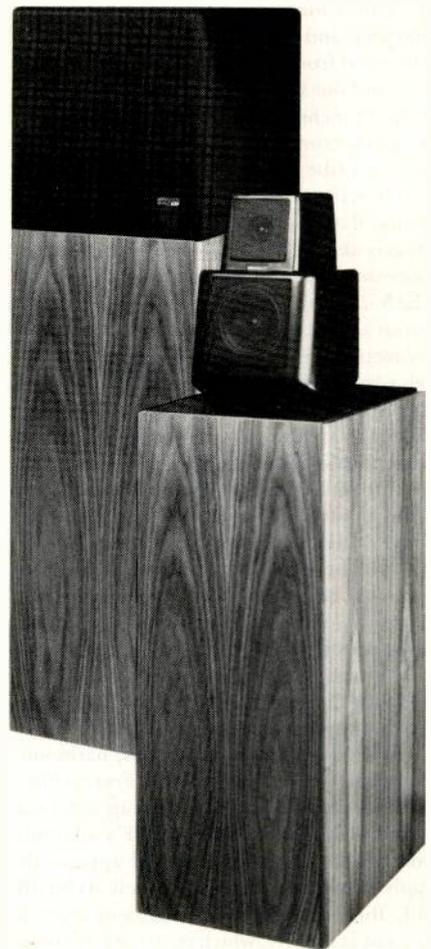
**EXTENSION** sets the speakers' low-frequency cutoff at 50, 35, 25, or 18 Hz (the corresponding Kube front-panel indications are respectively, and rather confusingly, labeled 1, 2, 3, and 4). The 25- and 18-Hz settings are used for music containing significant low-frequency information. The other settings are best for "when the source material does not require extension or is of inferior quality." KEF also suggests they be used for high-level background music (an oxymoron, eh?), to avoid amplifier overload. DSL's measurements of the **EXTENSION** showed that, relative to the 50-Hz setting, the remaining three raised the response at 20 Hz by about 4.5, 8, and 10.5 dB, respectively. The large boosts at the 25- and 18-Hz settings probably form the basis of the warnings about possible amplifier overload.

**Q-FACTOR** normally is set at 0.5, the position at which the speakers have their most accurate low-frequency transient response (they are "critically damped"). Higher (up to 0.7) or lower (down to 0.3) values may be applied if the recording itself has deficient bass response or (in an unusual recommendation) "if the recording acoustic is too dry or too reverberant." Higher, underdamped settings increase low-frequency "overhang" or "boom," while lower, overdamped values sound "drier" or "tighter." Lab measurements indicate that besides affecting speaker transient behavior, the **Q-FACTOR** also varied the speaker response (by about  $\pm 1.5$  dB at 20 Hz when it is varied from 0.3 to 0.7).

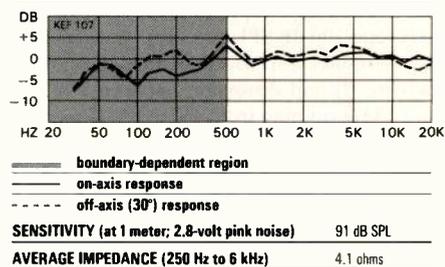
Compared with the Kube and the novel features it offers, the speakers with which it operates are slightly more conventional, if only because their technology has been introduced in previous KEF models. There are two bass drivers in the lower cabinet, each a cone woofer about 10 inches in diameter operating into its own sealed subenclosure. Bass energy radiates from a tuned port at the top of the main enclosure, which is said to reduce floor reflections that often lead to over-prominent bass. (For a more complete description of this Coupled Cavity design, see our test report on the KEF 104/2). The "head" in which the 4-inch cone midrange and 1-inch dome tweeter are mounted is damped to reduce mid-frequency coloration and rotates to permit precise focusing of the stereo image.

Connections are two gold-plated multiway binding posts located toward the bottom of the rear panel. The removable head cover is made of black stretch cloth over a surprisingly massive wood frame. When installed, it makes the speaker completely rectangular in shape. While the impression is still one of considerable bulk (and heft, if you need to lift the 99-pound enclosures), the appearance is always elegant. Available finishes are walnut, rosewood, and black ash. Screw-on plastic feet are provided for use on wooden or tiled floors.

The visual prominence of the KEF 107 is reinforced by its recommended placement:



#### ROOM RESPONSE CHARACTERISTICS



out in the room at least 1 meter (3 feet) from side walls and at least 50 centimeters (about 20 inches) from the wall behind them. DSL's tests and our listening were conducted with them 32 inches from the rear wall. For the lab tests, CONTOUR was dialed to 0, EXTENSION to 4 (the 18-Hz setting), and Q-FACTOR to 0.5. As you can see from the graph, response flatness was unusually good, at least on-axis above 1 kHz, where it varied by no more than  $\pm 1.5$  dB all the way up to 20 kHz. The 5-dB peak at 500 Hz seems to be "real," not an artifact of speaker placement or room geometry: It is present in both on- and off-axis responses, and the wavelength involved (approximately 2 feet) does not correspond closely to anything in the test setup nor to any specific dimension of the speaker or spacing of the drivers. The peak was not audible as such, however. Off-axis response above 1 kHz was also commendably flat, although there is a slight high-end rolloff, probably caused by tweeter beaming. Response below about 300 Hz—and with those Kube settings—was overall about 5 dB below the treble response, with small dips at 100 and 250 Hz. Bass rolloff at this EXTENSION setting started at about 50 Hz.

At least for lower test levels, harmonic distortion was just a little above average (below 1 percent from 100 Hz on up at 85 dB sound pressure level). But KEF's admonitions about amplifier overload apparently apply to speaker distortion as well. At 90 dB SPL, there was a distortion peak of about 3 percent at 630 Hz, which remained a prominent distortion band as the level was increased. At the same level, distortion at 63 Hz was still an acceptable  $2\frac{1}{2}$  percent. At a very loud 100 dB SPL, the speaker was clearly in trouble, with 63-Hz distortion of  $59\frac{1}{2}$  percent (!) and distortion between 200 Hz and 1 kHz running from  $4\frac{1}{2}$  to  $8\frac{1}{2}$  percent.

The Kube settings DSL used provide very extended bass response (especially considering the speaker's distance from the wall during the testing) but also apply considerable amounts of bass boost to the signal. This may account for the rather high distor-

tion levels: The drivers are being pushed hard. The low-end boost seems to continue into the infrasonic region, so we'd recommend use of an infrasonic filter or dialing the EXTENSION to a higher cutoff.

During the 300-Hz high-level pulse test, DSL found that there was an audible change in sound quality, accompanied (and perhaps caused by) clipping visible in a display of the microphone waveform. The speaker did accept, however, 48 volts peak, which is equivalent to 24.6 dBW (288 watts) into 8 ohms and 27.6 dBW (576 watts) into 4 ohms, to deliver a calculated peak sound pressure level of 115.6 dB at 1 meter.

It's interesting to note that nothing we heard out of the speaker at any reasonably loud listening level indicated that it would perform the way it did in the distortion measurements. In contrast to some preceding KEF flagship models, the 107 does not have a tendency to sound bottom-heavy or boomy on some types of program material. In fact, at times this speaker sounded just a bit too clean and "civilised." We missed a little of the richness and oomph provided by cellos and double basses in orchestral material and the viscerality of a kick drum in popular music. We believe this effect to be the result of the overall depression—averaging 3 dB as seen on the graph—in the bass and lower midrange between about 80 and 300 Hz. The Kube varies only overall response below 1 kHz and is evidently unable to correct for this. Also, despite the lab measurements, the speakers did reach into the deep bass with organ pedal tones and very-low-frequency sine waves, all of which were audibly undistorted.

Don't misinterpret us here. There is nothing "wrong" with the overall balance of the sound, which, on some material, struck us as unusually lifelike and well judged. It's just that our tastes would have preferred a bit more body to certain recordings. Your tastes, and your listening room, may not agree. Some of the Kube's effects, like changing the speaker damping, are quite subtle and were audible as such only when

playing test signals. But it does allow very fine adjustment of speaker response to the qualities of the listening room and your taste. Perhaps we just never found the best Kube settings for our room and music.

A considerable virtue of the 107 is its measured sensitivity of 91 dB SPL. This is at least 3 dB higher than the sensitivity of many other comparable high-end systems, meaning that the amplifier power (measured in watts) necessary to drive the 107 is half that necessary with speakers having sensitivities below 88 dB SPL. Any amplifier driving the 107 will be additionally pleased by the system's very uniform impedance curve. Its maximum is 5 ohms at 20 Hz, and its minimum is 3.1 ohms at about 75 Hz. Above 150 Hz, the impedance varies only between 4.6 and 3.9 ohms all the way up to 20 kHz.

This speaker's best quality, in which it seems to surpass our recollections of previous KEF models, is its stereo imaging. Not only is the left-right instrumental positioning startlingly rock solid (when listening from the ideal center position), but perceived depth, when the recording permits, is considerable. This is where KEF's computer-controlled driver and crossover matching have really paid off, inasmuch as image quality and stability are crucially dependent on the similarity of left- and right-channel signals. The precision of the 107's imaging allows all sorts of recording faults to be discerned. It also permits the full enjoyment of a well-made stereo recording and provides, at times, a realistic image we never would have expected from what we thought were mediocre discs.

Distortion measurements have never correlated well with speaker sound quality. That has never been more apparent than with the KEF 107, whose test results are so out of line with the excellent distortion measurements we obtained with the similar KEF 104/2 that we are totally mystified as to their cause. We certainly urge an audition of the 107. The extraordinary quality of its sound, especially its clarity and nearly palpable imaging, demands no less. ■

## T E S T R E P O R T S

# Dali 7 Loudspeaker

DIMENSIONS: 11 BY 37 INCHES (FRONT),  $12\frac{1}{4}$  INCHES DEEP. PRICE: \$599 PER PAIR PLUS \$45 SHIPPING. WARRANTY: "LIMITED," FIVE YEARS PARTS AND LABOR. MANUFACTURER: AUDIONORD, DENMARK; U.S. DISTRIBUTOR: DANISH AMERICAN LTD., INC., P.O. BOX 55386, VALENCIA, CALIF. 91355.

**M**ANUFACTURED IN DENMARK BY Audionord, the Dali line of speakers has been represented only once before in these pages—by the Dali 3 (June 1985). It was a compact two-way system;

here we address a three-way model dubbed the Dali 7, a so-called column loudspeaker designed to stand directly on the floor. Again, it offers good value for money, as the (CONTINUED ON PAGE 47)

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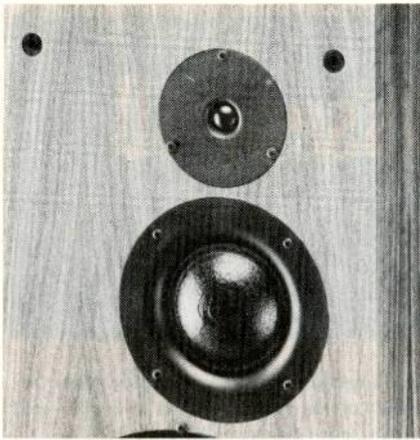
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THE DALI 7'S DRIVERS ARE DELIBERATELY OFFSET FROM THE CENTER OF THE FRONT PANEL.

(CONTINUED FROM PAGE 44)  
British say.

Each enclosure in a matched, mirror-image pair has its drivers closer to the inner than to the outer edge. Near the top is a 3/4-inch double-magnet dome tweeter. Next comes a 3-inch dome midrange driver. Below it, and centered on the vertical axis of the baffle, is a 10-inch cone woofer whose bass-reflex loading is vented near the bottom of the back panel. Nominal crossover frequencies are 900 Hz and 3 kHz.

The baffle, as well as the four adjacent surfaces, is finished in walnut veneer. The removable stretch-fabric grille is angled on the inside bottom corner, dramatizing that one enclosure is meant for the left channel and the other for the right (the grilles are interchangeable, however, so you can switch the indicator notch to the outside corner if you want). There are no controls. Connections are made to multiway binding posts set in a shallow recess on the back panel and angled to make hookup exceptionally easy.

The speakers can be used near the back wall (not right against it, if the vents are to have adequate "breathing space") or out in the room. Since the back is not finished in wood veneer (it's painted black, though the bottom of the speaker is veneered), Dali doesn't seem to expect that the speakers will be placed out in the room. But we preferred both the tonal balance and the stereo imaging with the speakers completely freestanding. Diversified Science Laboratories, however, measured the Dali 7 as its design implies: with the wall six inches behind it.

Its frequency response measures exceptionally flat, lying within about +3.9, -2.1 dB from the 50-Hz band to that centered on 12.5 kHz on-axis, relative to average response within the "music band." Depending on how you view the data, this can represent a very broad, shallow midrange response sag (some of which might well be attributable to floor reflection) or a moderate bass prominence coupled with a very gradually rising response characteristic through all but the very highest treble. Off-axis response is even flatter (+3.2, -1.1 dB on the same basis)

but otherwise almost identical, displaying nothing that could be construed as serious evidence of beaming.

Even away from the wall, the Dali 7's bass struck us as being slightly heavy with some program material in the listening tests. We also found the entire upper range consistently a hair on the bright side. Neither property could be regarded as cause for complaint, and some tastes will consider the subtle emphasis of these regions a sonic plus. Overall, we found the sound generally well balanced and often excellently delineated, with crisp instrumental textures and colors. This last quality enhanced—and was more than a little enhanced by—the excellent stereo imaging, attributable in part to the symmetrical driver placement and, perhaps, to the company's professed care with phase relationships.

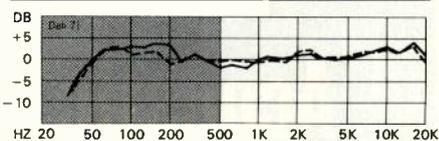
The impedance curve is fairly typical of a three-way vented system. But the vent resonant frequency evidently is infrasonic, because the curve slopes steeply away from its initial 25-ohm value at 20 Hz (the beginning of testing), drops to a 12-ohm minimum, rises to 27 ohms at woofer resonance (about 60 Hz), drops to a 6.8-ohm minimum in the midbass, rises to 20 ohms at about 1 kHz, drops again to 6.8 ohms, and wanders gradually upward to 10.4 ohms at 20 kHz. Average impedance values (11.4 ohms over the music band, 12.6 ohms for the full audio band) are relatively high even for an "8 ohm" system like the Dali 7 and should ensure that you have no problems even if you run parallel speaker pairs.

Total harmonic distortion over most of the frequency range averages about 1/4 percent at the lowest test level, 85 dB SPL (sound pressure level), increasing to more than 1 percent at the maximum level, 100 dB SPL. These figures aren't as low as the speakers' relative freedom from coloration might lead one to expect, but they aren't excessive either. Sensitivity is about average for a speaker of this type, and the Dali 7 accepted the full peak output of our test amplifier (equivalent to 512 watts into 8 ohms) to deliver a calculated peak sound pressure level of 115.1 dB SPL at 1 meter.

In sum, the Dali 7 is an attractive option at an attractive price. At \$644 per pair (including shipping), it would be hard to do much better, easy to do much worse. ■

(CONTINUED ON PAGE 48)

#### ROOM RESPONSE CHARACTERISTICS



boundary-dependent region	
on-axis response	
off-axis (30°) response	
<b>SENSITIVITY (at 1 meter; 2.8-volt pink noise)</b>	88 dB SPL
<b>AVERAGE IMPEDANCE (250 Hz to 6 kHz)</b>	11.4 ohms



#### REPORT POLICY

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# Acoustic Research Connoisseur 40 Loudspeaker



**DIMENSIONS:** 12 $\frac{3}{4}$  BY 27 $\frac{1}{2}$  INCHES (FRONT), 13 INCHES DEEP PLUS CLEARANCE FOR GRILLE; 31 INCHES HIGH ON SUPPLIED STAND. **PRICE:** \$1,000 PER PAIR, INCLUDING STANDS. **WARRANTY:** "FULL," FIVE YEARS PARTS AND LABOR. **MANUFACTURER:** TELEDYNE ACOUSTIC RESEARCH, 330 TURNPIKE ST., CANTON, MASS. 02021.

**S**EVERAL QUALITIES DISTINGUISH THE Connoisseur Series from other Acoustic Research loudspeakers: All of them have polypropylene diaphragms, and all are finished in real wood veneers—two features that aren't necessarily included in the regular AR line. But most important, surely, is the extra care that has been taken in the design of the crossover and dispersion pattern to improve imaging.

Insofar as the listening tests for the Connoisseur Series are conducted in England and with European listening priorities in mind (final tuning of AR's standard product line takes place in the United States), we might be tempted to conclude that American tastes will be better served by other AR models. If so, our taste must be European, because we were very taken by the sound of the Connoisseur 40, a tallish three-way system in an enclosure only slightly larger than traditional bookshelf size. The speakers are intended for vertical placement on the supplied floorstands, which cant them slightly, firing the treble upward toward the listener.

The drivers are arrayed along the vertical axis of the baffle panel. The woofer, at the bottom, is a 10-inch cone in a sealed (acoustic suspension) enclosure. Its diaphragm and that of the 6 $\frac{1}{2}$ -inch midrange cone are made of filled polypropylene. The 1-inch tweeter, at the top, is a liquid-cooled dome. The nominal crossovers are at 350 Hz and 5 kHz.

Regular readers of these reports will note that the midrange driver is a little larger than average for a three-way system. The reason is not only that the woofer crossover frequency is lower than average, requiring the midrange to handle longer wavelengths, but that some reduction in dispersion angle toward the top of the mid frequencies was deemed desirable for purposes of imaging—a consideration that, according to AR, is particularly dear to European audiophiles. In other words, reflections from the listening room's side walls are deliberately inhibited in the range below 5 kHz, which is critical for good imaging, so that directly propagated sonic information can maintain its primacy.

(The larger a diaphragm is, the lower the frequency at which it will begin to beam—that is, propagate directionally.)

At times in audio history, this sort of thinking has seemed to characterize the difference between European and American speaker designers. Broad dispersion—particularly in the highs, and even to the extent of so-called omnidirectionality (though often in the horizontal plane only)—has seldom obsessed Europeans to the degree it has many American engineers. On the contrary, "controlled" dispersion, as opposed to sonic scattering, has been a stated objective of some British designers whose products have impressed us mightily. This is the tradition to which the Connoisseur Series seeks to belong.

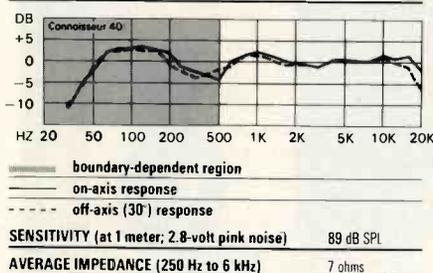
The finely finished cabinet (in oiled walnut) gives every indication—with one exception—of the careful detailing that AR says is a hallmark of the series. That exception, which is hardly a major one, is the placement of the multiway binding posts at the back of the speaker: They are recessed in a well too small to make hookup really easy with anything but banana plugs.

Foot prongs are provided to help the matching speaker stands "grip" the floor. Theoretically, the prongs aid in converting more of the driver energy into radiated sound and less into cabinet motion, but they may play havoc with carpets or finished floors unless the speakers are left permanently in one place.

The instruction folder accompanying the Connoisseur 40 suggests placement near a wall, which is how Diversified Science Laboratories tested them. Response was measured with the test speaker on its stand and 3 inches from the wall behind it. The curves are quite flat but for a marked dip in the midrange—presumably attributable to a floor reflection—flanked by slight prominences. Within the 30-degree angle between our on- and off-axis measurements, there is very little difference between the two curves, meaning that dispersion is essentially even within that angle, right up to the top of the treble.

In the listening room, we preferred the speakers away from the walls, which apparently reduced the prominence of the range between 60 and 200 Hz from the level shown in the graph. With the speakers in that position, the bass was full and true and the bal-

## ROOM RESPONSE CHARACTERISTICS



(CONTINUED ON PAGE 96)

**SURPRISE: MAKING  
HOME MOVIES IS EASY!  
WE EXAMINE THE FEATURES  
OF MORE THAN  
45 CAMCORDERS.**

# **C LIGHTS, CAMCORDER, ACTION!**

**BY FRANK LOVECE**

**CAMCORDERS**—COMBINATION VIDEO camera/recorders—have supplanted the bulkier two-piece camera/portable-VCR setups, offering a lightweight, integrated package almost as easy to operate as a “point and shoot” 35mm

film camera. Consequently, and despite their being among the costliest items any video buff could want short of a satellite dish system, camcorders have rekindled the home-movie craze. Unit sales may top one million by the end of this year.

Prices still have not strayed far downward, but home videographers now have a much greater choice for their money than when Sony introduced its seminal Betamovie camcorder three years ago. Since then, three other video formats have jumped in: full-size VHS, the compatible subformat VHS-C (which uses a smaller cassette), and 8mm. (Beta camcorders continue to be produced by Sony, which backs them up with a full line of Beta-format home recorders.) Models within each format usually are very similar to each other, as most are made by just one or two manufacturers.

(CONTINUED ON PAGE 50)

*Frank Lovece is a free-lance writer specializing in video.*

# 8mm



KYOCERA KD-200 8mm CAMCORDER

(CONTINUED FROM PAGE 49) This resemblance does not extend across formats, however: A VHS-C camcorder, for instance, may have features that are very different from those of a full-size VHS model. All four formats are represented in the charts accompanying this article.

## LESS IS MORE

**A**LL CAMCORDERS SHARE CERTAIN advantages over two-piece systems, the most obvious being size and weight. The smallest 8mm camcorder is almost palm-size, and other models range in weight from less than three pounds to a maximum of just more than six. (For uniformity, weights mentioned here and in the charts do not include battery or videocassette; battery weights can vary by type and the length of charge they hold.) Another welcome advantage is ease of use: There are no cables to connect between the camera and the recorder, and you don't have to carry a separate (and heavy) VCR over your shoulder. A camcorder can be called into action quickly enough to catch Baby's first steps.

On the down side, you get fewer playback effects than in a conventional portable VCR: Slow motion and frame-by-frame advance usually are missing, for example. And while portable VCRs normally are sold with

SONY BMC-660K BETA CAMCORDER



# BETA

a companion tuner/timer for recording from broadcast or cable TV, camcorders include only the *connections* for recording from an external source. To play back tapes, most include an RF adapter (for connection to a TV set's antenna terminal) as well as direct audio-video outputs for hookup to a monitor. Some videographers may find that a camcorder's playback capabilities are sufficient to eliminate the need for a regular home VCR.

## TAKING AIM

**T**HE CAMERA PORTION OF A CAMCORDER IS where the action is. Most models use various sensors to automatically adjust focus, iris opening (aperture), and white balance (color temperature). A power zoom lens usually is standard, as is a setting for macro (close-up) focusing. Many camcorders enable you to do one-button fades and include simple character generators that can superimpose the time and date on-screen. In addition, most models have ports for hooking up more sophisticated character-generating devices that might be used for titling your creations.

There are two kinds of viewfinders. The more common (and more expensive) *electronic* viewfinder is actually a tiny video monitor that displays exactly what you're shooting, including the light conditions. A "quick review" feature will back up the tape a few seconds and then play it, making it even easier to judge the need for a retake (and therefore reducing the amount of editing). Many camcorders include a backlight-compensation control, which permits manual adjustment of the otherwise automatic iris so that silhouetted subjects don't get blacked out.

A few models have *optical* viewfinders that look through a separate lens mounted near the camera lens. These viewfinders introduce parallax error (caused by the camera and your eye seeing the subject from slightly different angles), which makes very precise aiming difficult. But even more troublesome is the fact that an optical viewfinder, unlike its electronic counterpart, doesn't show errors in focusing (if the autofocus should somehow get fooled) and contrast. Indicators can warn of low lighting, but seeing exactly what you're shooting (albeit in black-and-white) makes electronic viewfinders easier to use.

Most camcorder autofocus systems bounce an infrared beam off an object to provide range data that a microprocessor uses to adjust the lens. Most VHS-C camcorders, however, use a through-the-lens (TTL) focusing system (as in some autofocus film cameras), also with a lens-adjusting microprocessor. Sony's ultralightweight 8mm Handycam uses a manually selected three-position fixed-focus lens, but tight shots can be difficult to set up because the unit's optical viewfinder can't verify proper focusing.

# VHS-C



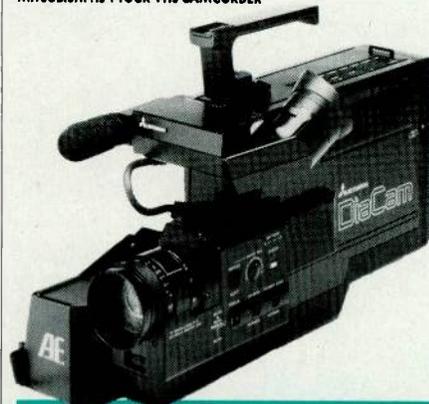
JVC GR-C7 VHS-C CAMCORDER

The image-pickup device in a camcorder, as in any type of video camera, is either a vacuum tube such as a Saticon or a Newvicon—sometimes with "high band" technology designed to improve the picture—or a solid-state microchip. If the latter, it is usually called a charge-coupled device (CCD) or a metal-oxide semiconductor (MOS) image sensor. The principal advantage of a solid-state pickup is its immunity to "burn-in," or streaking from bright picture highlights (such as reflections of the sun). Tube pickups are more sensitive to such exposure and must be aimed with discretion. On the other hand, they usually produce more accurate color balance and work better in low light (though the newest chips are about as good in the latter respect). So each kind of pickup has distinct benefits.

## FOR THE RECORDIST

**S**UPER BETA AND HQ—THE BETA AND VHS versions, respectively, of recent picture-enhancing technology—are now widely used in camcorders. Completely missing, however, are their audio counterparts: Beta Hi-Fi and VHS Hi-Fi. In fact, only one current camcorder offers stereo sound recording: Kodak's top modular 8mm unit, the MVS-5000, can record a PCM digital stereo (CONTINUED ON PAGE 54)

MITSUBISHI HS-F10UR VHS CAMCORDER



# VHS

MODEL	WEIGHT <sup>1</sup>	LENS <sup>2</sup>	INFRARED AUTOFOCUS <sup>3</sup>	IMAGE DEVICE	HQ	TAPE TRANSPORT FEATURES <sup>4</sup>	OTHER FEATURES <sup>5</sup>	DIRECT TV PLAYBACK <sup>6</sup>	MINIMUM ILLUMINATION <sup>7</sup>	PRICE
<b>GENERAL ELECTRIC</b> 9-9606	5½ lbs.	f/1.2; 6:1 (9-54mm) power zoom w/macro	Yes	½-inch high-band Newvicon	Yes	Freeze frame; forward/reverse scan	Auto fade-in/out; quick review; time/date generator; audio dub; light shoe	Yes	7 lux	\$1,500
<b>GENERAL ELECTRIC</b> 9-9608	5½ lbs.	f/1.2; 6:1 (9-54mm) power zoom w/macro	Yes	½-inch high-band Newvicon	Yes	Same as above	Same as above	Yes	7 lux	\$1,600
<b>GENERAL ELECTRIC</b> 9-9610	5½ lbs.	f/1.2; 8:1 (8.5-64mm) power zoom w/macro	Yes	CCD	Yes	Same as above	Same as above	Yes	7 lux	\$1,800
<b>GOLDSTAR</b> GVM-70AF	6½ lbs.	f/1.4; 6:1 (11.5-70mm) power zoom w/macro	Yes	CCD	No	Freeze frame; forward/reverse scan	Light shoe	Yes	19 lux	\$1,700
<b>HITACHI</b> VM-2100A	5½ lbs.	f/1.2; 6:1 (8-51mm) power zoom w/macro	Yes	½-inch high-band Saticon	Yes	Freeze frame; forward/reverse scan	Auto/manual iris (no separate backlight control); quick review; light shoe	Yes	7 lux	\$1,600
<b>HITACHI</b> VM-5000A	5½ lbs.	f/1.2; 6:1 (11.5-69mm) power zoom w/macro	Yes	MOS	Yes	Same as above	Same as above, plus time/date generator	Yes	7 lux	\$1,800
<b>INSTANT REPLAY</b> 66-IT3	6½ lbs.	f/1.2; 6:1 (9-54mm) power zoom w/macro	Yes	½-inch Newvicon	No	Freeze frame; forward/reverse scan	PAL-, SECAM- and NTSC-compatible; quick review; time/date generator; audio dub; light shoe	Yes	10 lux	\$1,600
<b>INSTANT REPLAY</b> 92-IT3	5½ lbs.	f/1.2; 6:1 (9-54mm) power zoom w/macro	Yes	½-inch Newvicon	Yes	Same as above	Same as above	Not avail.	7 lux	\$1,900
<b>INSTANT REPLAY</b> 93-IT3	5½ lbs.	f/1.2; 8:1 (8.5-68mm) power zoom w/macro	Yes	CCD	Yes	Same as above	Same as above	Yes	20 lux	\$2,000
<b>MAGNAVOX</b> VR-8292	5½ lbs.	f/1.2; 6:1 (9-54mm) power zoom w/macro	Yes	½-inch Newvicon	Yes	Freeze frame; forward/reverse scan	Quick review; time/date generator; audio dub; light shoe	With optional V-80071 RF adapter (\$190)	7 lux	Not avail.
<b>MAGNAVOX</b> VR-8293	5½ lbs.	f/1.2; 8:1 (8.5-68mm) power zoom w/macro	Yes	CCD	Yes	Same as above	Same as above	Yes	7 lux	Not avail.
<b>MINOLTA</b> CR-1200SAF	5½ lbs.	f/1.2; 6:1 (11.5-69mm) power zoom w/macro	Yes	MOS	Yes	Freeze frame; forward/reverse scan	Auto/manual iris (no separate backlight control); quick review; time/date generator; light shoe	Yes	7 lux	\$2,085
<b>MITSUBISHI</b> HS-F10UR	5¼ lbs.	f/1.2; 6:1 (8.5-51mm) power zoom w/macro	Yes	½-inch high-band Saticon	No	Freeze frame; forward/reverse scan	Auto iris (no override or separate backlight control); video gain; audio dub; light shoe	Yes	7 lux	\$1,550
<b>NEC</b> V-20U	5½ lbs.	f/1.2; 6:1 (8.5-51mm) power zoom w/macro	Yes	CCD	Yes	Freeze frame; forward/reverse scan	Auto/manual iris (no separate backlight control); video gain; quick review; light shoe	Yes	10 lux	\$1,800
<b>OLYMPUS</b> VX-403	5½ lbs.	f/1.2; 8:1 (8.5-68mm) power zoom w/macro	Yes	CCD	Yes	Freeze frame; forward/reverse scan	Auto fade-in/out; quick review; audio dub; light shoe	Yes	7 lux	Not avail.
<b>PANASONIC</b> PV-210	5½ lbs.	f/1.2; 6:1 (9-54mm) power zoom w/macro	Yes	½-inch Newvicon	Yes	Freeze frame; forward/reverse scan	Auto fade-in/out; quick review; time/date generator; audio dub	With optional PV-A22M RF adapter (\$190)	7 lux	\$1,500
<b>PANASONIC</b> PV-220	Same as PV-210, but with RF adapter and wired record/pause remote control.									\$1,700

MODEL	WEIGHT	LENS <sup>2</sup>	INFRARED AUTOFOCUS <sup>3</sup> IMAGE DEVICE	HQ	TAPE TRANSPORT FEATURES <sup>4</sup>	OTHER FEATURES <sup>5</sup>	DIRECT TV PLAYBACK <sup>6</sup>	MINIMUM ILLUMINATION <sup>7</sup>	PRICE
<b>PANASONIC</b> PV-300	5½ lbs.	f/1.2; 8:1 (8.5–68mm) power zoom w/macro	Yes	CCD	Yes	Same as PV-220	Same as PV-220	Yes	7 lux \$2,000
<b>PENTAX</b> PV-C33A	5½ lbs.	f/1.2; 6:1 power zoom w/macro	Yes	½-inch Saticon	Yes	Freeze frame; forward/reverse scan	Auto/manual iris (no separate backlight control); quick review	Not avail.	7 lux \$1,700
<b>PENTAX</b> PV-C55A	5½ lbs.	f/1.2; 6:1 power zoom w/macro	Yes	MOS	Yes	Same as above	Same as above	Not avail.	7 lux Not avail.
<b>PHILCO</b> VCR-801	5½ lbs.	f/1.2; 6:1 (8–48mm) power zoom w/macro	Yes	½-inch Newvicon	Yes	Freeze frame; forward/reverse scan	Quick review; time/ date generator; audio dub; light shoe	With optional V-80071 RF adapter (\$190)	7 lux Not avail.
<b>QUASAR</b> VM-11	5½ lbs.	f/1.2; 6:1 (9–54mm) power zoom w/macro	Yes	½-inch Newvicon	Yes	Freeze frame; forward/reverse scan	Auto fade-in/out; quick review; time/ date generator; light shoe	Yes	7 lux \$1,770
<b>QUASAR</b> VM-20	5½ lbs.	f/1.2; 8:1 (8.5–68mm) power zoom w/macro	Yes	CCD	Yes	Same as above	Same as above	Yes	7 lux \$1,970
<b>RCA</b> CMR-200	5½ lbs.	f/1.2; 6:1 (8.5–51mm) power zoom w/macro	Yes	½-inch Saticon	Yes	Freeze frame; forward/reverse scan	Auto/manual iris (no separate backlight control); quick review; time/date generator	Yes	7 lux \$1,300
<b>RCA</b> CMR-300	5½ lbs.	f/1.2; 6:1 (11.5–69mm) power zoom w/macro	Yes	MOS	Yes	Same as above	Same as above	Yes	7 lux \$1,500
<b>SEARS</b> 53721	5¼ lbs.	f/1.2; 6:1 (8.5–51mm) power zoom w/macro	Yes	½-inch Newvicon	Yes	Freeze frame; forward/reverse scan	Auto/manual iris (no separate backlight control); quick review	Yes	7 lux \$1,290
<b>SHARP</b> VC-C10UAH	5¾ lbs.	f/1.4; 6:1 (9–54mm) power zoom w/macro	Yes	½-inch Newvicon	Yes	Freeze frame; forward/reverse scan	Auto/manual iris (no separate backlight control); quick review; date generator; light shoe	Yes	10 lux Not avail.
<b>SHARP</b> VC-C20UAH (available late '86)	5¾ lbs.	f/1.4; 6:1 (11–66mm) power zoom w/macro	Yes	CCD	Yes	Same as above	Linear-track stereo; stereo mike; quick review; date generator; audio dub; light shoe	Yes	Not avail. Not avail.
<b>SYLVANIA</b> VCC-151	5½ lbs.	f/1.2; 6:1 (9–54mm) power zoom w/macro	Yes	½-inch Newvicon	Yes	Freeze frame; forward/reverse scan	Quick review; time/ date generator; audio dub; light shoe	With optional V-80071 RF adapter (\$190)	7 lux Not avail.
<b>TEKNIKA</b> C-6010	5½ lbs.	f/1.2; 6:1 (9–54mm) power zoom w/macro	Yes	½-inch Newvicon	Yes	Freeze frame; forward/reverse scan	Auto fade-in/out; quick review; time/ date generator; audio dub; light shoe	Yes	7 lux \$1,700

*Audio Note:* Unless otherwise noted, all VHS, VHS-C, and Beta camcorders record a monaural linear soundtrack, and all 8mm camcorders record monaurally using AFM (see text).

Charts by Frank Lovece

# 8mm

MODEL	WEIGHT <sup>1</sup>	LENS <sup>2</sup>	INFRARED AUTOFOCUS <sup>3</sup>	IMAGE DEVICE	RECORD/PLAYBACK SPEEDS; TAPE TRANSPORT FEATURES <sup>4</sup>	OTHER FEATURES <sup>5</sup>	DIRECT TV PLAYBACK <sup>6</sup>	MINIMUM ILLUMINATION <sup>7</sup>	PRICE
<b>AIWA</b> CV-80	5½ lbs.	f/1.4; 6:1 (12-72mm) power zoom	Yes	CCD	SP/SP, LP; freeze frame; forward/reverse scan	Light shoe	Yes	19 lux	\$1,800
<b>CANON</b> VM-E1	4½ lbs.	f/1.2; 6:1 (8.5-51mm) power zoom w/macro	Yes	½-inch high-band Satican	SP/SP, LP; freeze frame; forward/reverse scan	Auto/manual iris (no separate backlight control); auto fade-in/out	Yes	19 lux	\$1,600
<b>GOLDSTAR</b> GS-8AF	5 lbs.	f/1.4; 6:1 (11.5-70mm) power zoom w/macro	Yes	CCD	SP/SP, LP; freeze frame; forward/reverse scan	Light shoe	Yes	19 lux	\$1,700
<b>INSTANT REPLAY</b> ULTRA HC1	2¾ lbs.	f/1.6; manual, 3-position fixed focus w/macro	No	CCD	SP (record only)	Optical viewfinder, but transmits RF signals (picture only) wirelessly to user-supplied monitor/TV; price includes modified Sony EV-CBU VCR	No	20 lux	\$1,400
<b>KODAK*</b> MVS-440 camera	2¼ lbs.	f/1.2; 6:1 (9-54mm) power zoom w/macro	No	½-inch Newvican	—	Auto fade-in/out; positive/negative imaging	—	10 lux	\$700
<b>KODAK</b> MVS-460 camera	2¾ lbs.	f/1.2; 6:1 (9-54mm) power zoom w/macro	Yes	½-inch Newvican	—	Same as above	—	10 lux	\$1,000
<b>KODAK</b> MVS-3000 docking VCR	2 lbs.	—	—	—	SP, LP/SP, LP; freeze frame; frame advance; slow motion; forward/reverse scan	—	With optional MVS-52 RF converter (\$60)	—	\$800
<b>KODAK</b> MVS-5000 docking VCR	2 lbs.	—	—	—	Same as above	PCM digital stereo audio with video (requires optional stereo mike[s]); audio dub	Same as above	—	\$1,000
<b>KYOCERA</b> KD-200	5½ lbs.	f/1.4; 6:1 (12-72 mm) power zoom	Yes	CCD	SP/SP, LP; freeze frame; forward/reverse scan	Quick review; edit-mode signal amp; light shoe	Yes	19 lux	\$1,750
<b>NEC</b> EM-ABU	5 lbs.	f/1.2; 6:1 (9-54mm) power zoom w/macro	Yes	CCD	Speeds not avail.; freeze frame; forward/reverse scan	Auto/manual iris (no separate backlight control); quick review; edit-mode signal amp; light shoe	Yes	7 lux	Not avail.
<b>OLYMPUS</b> VX-801	3¼ lbs.	f/1.2; 6:1 (9-54mm) power zoom w/macro	Yes	CCD	SP/SP; freeze frame; frame advance; forward/reverse scan	Auto fade-in/out; light shoe	Yes	7 lux	\$1,850
<b>SANYO</b> VM-8	5½ lbs.	f/1.4; 6:1 (12-72mm) power zoom	Yes	CCD	SP/SP, LP; freeze frame; forward/reverse scan	Quick review; edit mode signal amp; light shoe	Yes	19 lux	\$1,470
<b>SONY</b> CCD-M8U Handycam	2¼ lbs.	f/1.6; manual, 3-position fixed focus	No	CCD	SP (record only)	Optical viewfinder; no mike or earphone jacks	No	25 lux	\$1,300
<b>SONY</b> CCD-M9U Handycam Sparts	Same as CCD-M8U but with heavy-plastic, water-resistant shell for outdoor (but not underwater) shooting								\$1,350
<b>SONY</b> CCD-V8AEU	5½ lbs.	f/1.4; 6:1 (12-72mm) power zoom	Yes	CCD	SP/SP, LP; freeze frame; forward/reverse scan	Quick review; edit-mode signal amp; light shoe	Yes	19 lux	\$1,800

# VHS-C

MODEL	WEIGHT <sup>1</sup>	LENS <sup>2</sup>	AUTOFOCUS TYPE <sup>3</sup>	IMAGE DEVICE	HQ	TAPE TRANSPORT FEATURES <sup>4</sup>	OTHER FEATURES <sup>5</sup>	DIRECT TV PLAYBACK <sup>6</sup>	MINIMUM ILLUMINATION <sup>7</sup>	PRICE
JVC GR-C7	3 lbs.	f/1.6; 6:1 (9-54mm) power zoom w/macro	TTL/ CCD	CCD	Yes	Freeze frame; forward/ reverse scan	Auto audio/video fade-in/out; quick review; carrying case standard	Yes	15 lux	\$1,500
TOSHIBA SK-60	3 lbs.	f/1.6; 6:1 power zoom w/macro	Not avail.	CCD	Yes	Freeze frame; forward/ reverse scan	Not avail.	Yes	15 lux	Not avail.
ZENITH VM-6200	3 lbs.	f/1.6; 6:1 (9-54mm) power zoom w/macro	TTL/ CCD	CCD	Yes	Freeze frame; forward/ reverse scan	Auto audio/video fade-in/out; quick review	Yes	15 lux	Not avail.

# BETA

MODEL	WEIGHT <sup>1</sup>	LENS <sup>2</sup>	INFRARED AUTOFOCUS <sup>3</sup>	IMAGE DEVICE	SUPER BETA	TAPE TRANSPORT FEATURES <sup>4</sup>	OTHER FEATURES <sup>5</sup>	DIRECT TV PLAYBACK <sup>6</sup>	MINIMUM ILLUMINATION <sup>7</sup>	PRICE
SONY BMC-660K	5½ lbs.	f/1.4; 6:1 (12-72mm) power zoom	Yes	CCD	Yes	Beta II (record only)	Optical viewfinder; time/date gen- erator; light shoe	No	25 lux	\$1,500

<sup>1</sup>Not including battery or videocassette.

<sup>2</sup>Unless otherwise noted, all have automatic iris with backlight compensation control; manual fade-in/out possible.

<sup>3</sup>All have manual override.

<sup>4</sup>All have play, record, rewind, fast-forward, and pause controls.

All VHS models record and play back in Standard Play (SP) only; all VHS-C models record and play back in SP and Extended Play (EP). SP provides two hours with T-120 VHS tape or P6-120 8mm tape; 20 minutes with TC-20 VHS-C tape. Long Play (LP) is double time. EP is triple time. Beta II provides three hours and 20 minutes with L-830 tape.

<sup>5</sup>Unless otherwise noted, all have automatic color/white-balance with manual override; tape counter with zero-reset memory; standby mode; viewfinder indicators; microphone; and mike and earphone jacks. The 8mm models have a "flying" erase head for cleaner edits than with conventional stationary erase heads. Unless otherwise noted, all models have electronic viewfinders.

<sup>6</sup>With supplied RF adapter.

<sup>7</sup>In video, "minimum illumination" is a nonstandardized specification, supplied here only as a general indication of low-light shooting capability. Data given by manufacturer and not independently confirmed by HIGH FIDELITY test reports.

<sup>8</sup>Kodak's MVS-440 and MVS-460 modular video cameras can each dock with the company's MVS-3000 and MVS-5000 modular VCRs, for a total of four camcorder combinations.

(CONTINUED FROM PAGE 50) soundtrack when used with a stereo microphone setup. (See our August test report on Kodak's MVS-5380, comprising the MVS-5000 recorder and the MVS-380 tuner/timer.) This model can also be used as an audio-only machine, recording as many as six two- or four-hour tracks (depending on recording speed). Standard 8mm camcorders record a mono AFM soundtrack (multiplexed into the video tracks in the same way as Beta Hi-Fi or VHS Hi-Fi) that offers better performance than the linear mono tracks on Beta and VHS models. One Sharp VHS unit

to be introduced soon will record a linear stereo soundtrack, but not VHS Hi-Fi.

Finally, there's the matter of video heads, the tiny electromagnetic components that "write" on and "read" back the videotape. Virtually all VHS camcorders have four video heads. However, because a smaller head drum is used, the multispeed playback effects usually associated with four-head home units are not possible. VHS-C models and most 8mm units have just two video heads. The latter also have a "flying" (rather than stationary) erase head—a trickle-down from professional VCRs—for cleaner edits.

Because of the geometry of the Betacam system, the Sony Beta model shown in our charts uses only one double-gap video head.

With the proliferation of camcorders today and with industry figures showing an almost completely eroded market for two-piece systems, these all-in-one moviemakers represent not the future but the present. Although the retail prices shown in our charts are quite high, most stores sell at a discount (albeit not to the same extent as on home VCRs). If the traditional pattern continues, however, even lower prices are on the way. At last.

# WHAT'S NEW IN SPEAKER TESTING

**A COMBINATION OF COMPUTER TECHNOLOGY AND PSYCHOACOUSTIC RESEARCH WILL LEAD TO TESTS THAT TRULY EVALUATE SPEAKER QUALITY.**

**M**EASURING THE PERFORMANCE OF A loudspeaker has never been easy. Engineers drag speakers into special echo-free rooms, shove them into echo chambers, wheel them into "normal" living rooms, and hoist them up flagpoles (to get them far away from any reflecting surfaces). Calibrated test microphones are placed within 1/4 inch of the woofer, positioned exactly 1 meter away, or whirled around the room like a bola swung by a gaucho (so as to reduce the effects of room resonances on the measurement). Mikes also get mounted inside speaker cabinets, built into models of human heads, or even inserted into the ear canals of (presumably) willing listeners. Speakers are fed clicklike impulses, pure sine waves, bursts of sine waves, square waves, white noise, pink noise, and even rock 'n' roll.

Why this variety? Audiophiles and speaker designers have learned over decades that a few simple measurements cannot predict speaker sound quality, especially in the home. Why is this so? And is this situation permanent? To understand why the answer to the second question is no, you must carefully examine some answers to the first.

## SPEAKERS IN ROOMS

**B**ETWEEN THE TIME A SIGNAL REACHES A speaker's terminals and the instant you hear the corresponding sound, several things happen. First, the sound is divided by the crossover network and fed

to the various drivers of the speaker system. Each of these drivers then radiates its assigned vibrations. These recombine in the air and travel to the listener's ears. Because the drivers are usually spaced apart and emit different signals, every point in the space surrounding the speaker receives a different combination of driver outputs. The speaker's measured and audible response can therefore be different from place to place in the room.

A large portion of the energy radiated by the loudspeaker is reflected (from the walls, ceiling, floor, or furniture) at least once before reaching the listener. When the reflections arrive at the ear, their levels and timings will, for several acoustic and psychoacoustic reasons, significantly affect the perceived frequency response, not to mention other aspects of speaker performance, such as imaging precision.

Figure 1 shows the frequency response of a woofer as measured from various points in a listening room. The top curve was made very close to the cone (within 1 inch), the bottom curve at about 1 meter. As the microphone moves away, the sound level decreases (shown by the overall lowering of the curves); just as important, room reflections begin to alter the woofer's apparent response, as can be seen by the lower curves.

Reflections also develop and change on their own, with a time scale determined by the acoustics of the room. The result is a blurring of the exact details of the original speaker signal. Figure 2 documents a significant, but usually ignored,

speaker-room interaction of this type. It shows what happens in a typical listening room when a 300-Hz sine wave is suddenly applied to a speaker. Instead of appearing instantly and continuing evenly, the sound varies in level as room reflections build up, adding to and subtracting from the direct sound in a haphazard fashion. After about 250 milliseconds (1/4 second, which is a very long time in psychoacoustic terms), the level stabilizes.

Because of room-related effects like this one, short musical sounds can seem to have a tonal balance different from that of longer ones. These phenomena may, for example, explain why a certain speaker might sound just right on cellos but bottom-heavy and boomy on bass drums.

## TEST METHODS

**T**HE FEW EXAMPLES MENTIONED ABOVE demonstrate that simply measuring a speaker in a listening room—the intuitively obvious way of testing it—will provide few clues as to what the speaker, as opposed to the room, is doing to the sound. Designers get around this problem by one of two means: eliminating the room reflections or compensating for them in the measurement technique.

One important method of testing speakers makes use of a special reflection-free room called an anechoic (no echo) chamber. Such a space enables a speaker designer to examine the behavior of the speaker without such hard-to-control variables as room reflections. Anechoic testing is very useful for designing drivers and crossovers and is almost always the first step in testing a speaker system. Frequency response, radiation pattern, distortion, and efficiency can all be measured in this environment. Any type of test signal can be used in anechoic testing, but sine waves are used most often.

Because the listening room does have an important effect on speaker sound, most speaker designers also include a variety of "real room" tests in their repertoire. However, a room-response graph can be so complex that it correlates poorly to the perceived performance of the speaker and is therefore "unreadable" (as in the lower traces of Fig. 1). This makes it necessary to find ways to remove some room-related effects.

A common way of doing this is to use a random-noise signal (such as pink noise), together with a spectrum analyzer. Noise signals are less likely to stimulate room resonances than discrete-frequency sine (CONTINUED ON PAGE 58)

*Kenneth L. Kantor is president of Product Design and Evaluation Services in San Francisco. Previously, he worked for Acoustic Research, where he was director of research and principal designer of the MGC-1 loudspeaker.*

# 2001: A SPEAKER ODYSSEY



**T**HE FOLLOWING FANTASY REVIEW OF THE Percept IM-1 loudspeaker includes results from five unconventional tests—unconventional because they have not yet been invented. Two are based on extrapolations from present-day methods. The other three are the predicted result of a combination of psychoacoustic research with computerized instrumentation. Before we get to the review itself, here are descriptions of these five tests.

■ **Critical-band room response** begins with a conventional in-room frequency-response measurement (perhaps made by pink-noise or impulse testing). The data are then smoothed out by computer to a simpler curve that approximates the tonal balance that the human ear will perceive. Critical-band filtering has the advantage of producing curves that are as easy to "read" as anechoic measurements without excluding the effects of the listening room on tonal balance. It is likely that subtle tonal differences between speakers will show up in this kind of measurement, which is seldom the case with the more traditional frequency-response tests.

■ **Stereo image precision** is depicted by a graph showing the angular width of a sound source reproduced at various loca-

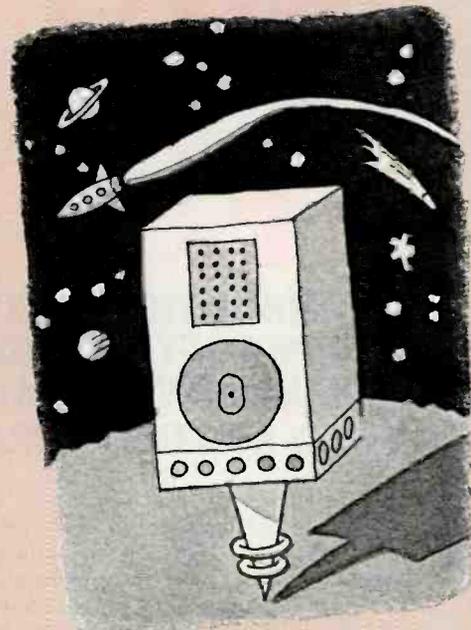
tions between the two speakers. This test can be made using actual listeners or by mathematically comparing signals received at microphones placed in the ear canals of artificial heads. If the reproduction were perfect, the sound sources would appear focused at every point across the sound stage. The inherent "localization blur" of human hearing is on the order of 1 or 2 degrees, so a reading of 3 degrees in this test is indicative of a speaker capable of very precise imaging.

■ **Coloration** of an audio signal results from several factors. Harmonic and intermodulation distortion, excessive (not all!) phase errors, delayed resonances, and early reflections can cause sonic degradation without showing up in a conventional frequency-response measurement. For this reason, it is important to devise a test technique that integrates these factors. To arrive at a single coloration curve, echo-weighting results could be combined with phase, distortion, and impulse-response data. It eventually will be possible to estimate what amounts of coloration are tolerable or even desirable.

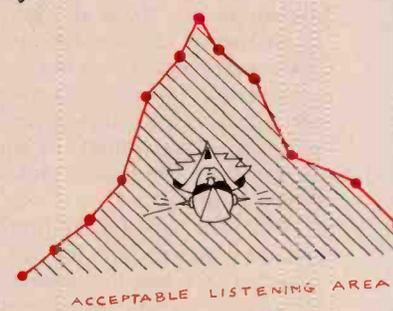
■ **Re-creation of source location** can be determined by a simple and useful technique first used back in 1934. A human voice is recorded at nine positions around a room. This recording is then played through the speakers being tested, and a listening panel indicates from where each of the voices is heard. This can then be directly compared with the original locations. Care must be taken to choose a "neutral" room and a microphone technique representative of those used in commercial recording, but the tests can be very enlightening if done properly.

■ **An acceptable listening area** can be determined by combining localization and frequency-response tests made at various listening positions. For example, the results of the source-location test described above might work perfectly at a central listening position but not at all when a listener is seated closer to one speaker than the other. One speaker designer might want to sacrifice coloration performance to achieve a wider listening area. Another designer might want to restrict the listening area to get better localization accuracy. Buyers need to know about these decisions in order to choose the best speakers for their needs.

# PERCEPT



DIMENSIONS: 10 BY 22.5 INCHES (FRONT), 11.5 INCHES DEEP. PRICE: \$330 PER PAIR, INCLUDING STANDS. WARRANTY: "LIMITED," FIVE YEARS PARTS AND LABOR. MANUFACTURER: PERCEPT LOUDSPEAKERS, POST-QUAKE ISLAND, CALIF. 98765-4321.2.



# IM-1 LOUDSPEAKER

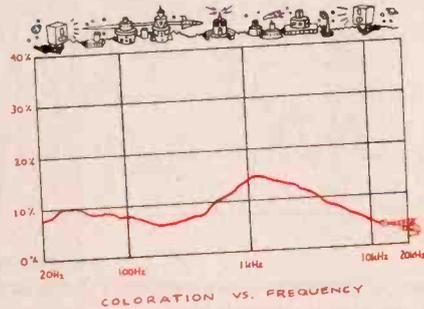
**T**HE IM-1 IS THE FIRST PRODUCT FROM Percept Loudspeakers, a small California company. Despite its relatively modest price, the IM-1 incorporates some interesting design features intended to improve both its tonal balance and its imaging characteristics. The compact two-way system uses an 8-inch acoustic suspension woofer loaded by an innovative elastic resonance-tuned enclosure, which together provide a low-frequency cutoff of about 35 Hz. Frequencies above 1 kHz are radiated by a flexi-planar constant-directivity tweeter. The system is optimized for placement within 1 foot of a wall and sits about 30 inches off the floor on its stands.

Diversified Science Laboratories measured the room response of the IM-1 as being within a commendable  $\pm 2$  dB from 33 Hz to 18 kHz, after critical-band filtering. A broad depression is visible in the crossover region, but we consider this to be of minor importance. Sensitivity is on the low side, at 86.5 dB, but power handling and distortion proved to be a bit better than average for a speaker of this size.

Distortion runs less than 0.5 percent at 100 dB SPL from 60 Hz on up, increasing to 3.0 percent at 30 Hz. The elastic enclosure allows various controlled cabinet vibrations to augment the woofer response at low frequencies. Although this does provide excellent response from such a small driver, you pay a price in distortion in the extreme bass region. Impedance reaches a minimum of 2 ohms at 80 Hz, with well-controlled phase, so the speaker should present no problem to contemporary amplifiers. The manufacturer lists the continuous power rating of the IM-1 at 55 watts, and although we did

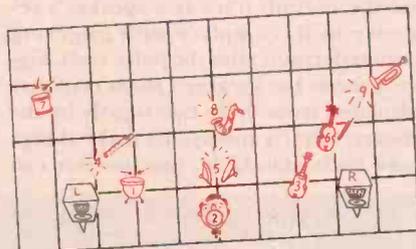
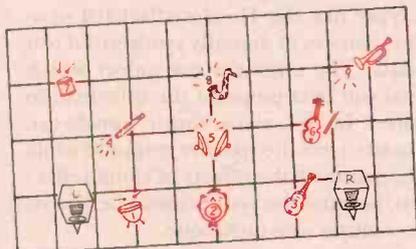
not wish to damage the speakers by verifying this, it seems a realistic figure given that we measured a 50-millisecond pulse-handling ability of 1,350 watts for a calculated peak output of 117.8 dB SPL. While these figures are not state-of-the-art for 2001, the dynamic range of the IM-1 should prove sufficient for all but the most demanding applications.

The flexi-planar tweeter is designed to provide a constant radiation angle over most of its operating range. This is said to reduce reflection-induced coloration and to improve imaging while maintaining a wide



er speakers we've tested recently, as can be seen. Clearly, the IM-1 is not designed for close-in, large-group listening.

Our listening panel liked the sound of the IM-1. It has the smooth response and detailed presentation that we have come to expect from good loudspeakers—and this at a very reasonable price. The ambient field is good, although not fully surrounding the listener. Some of our panelists would have preferred a more ambient musical presentation, but that's really a matter of taste. Besides, the most realistic ambience can be obtained only through the use of digital ambience processing and extra speakers or with a pair of the new psychoacoustic-processing speakers just coming on the market. On some program material, particularly vocals, the slight mid-range depression was audible, but overall the sound was very smooth and uncolored. With the exception of the distortion in the very deepest bass and a fairly average dynamic range, there is little to criticize about the IM-1. At \$330 per pair, these are well worth a listen.



SOURCE LOCATION CHART

listening area. Measurements provided by DSL verify this claim. The image size vs. lateral position curve is excellent, showing both a well-focused central image of 3 lateral degrees and a spread of only 6 degrees across the entire sound stage. Coloration vs. frequency is also very low: less than 10 percent, with the exception of a small region just above the crossover point. This probably is caused by the tweeter's failure to maintain constant directivity below 2 kHz. The source-location chart shows good correspondence to the recording, including proper image width and depth. The acceptable listening area is somewhat more restricted than that of oth-

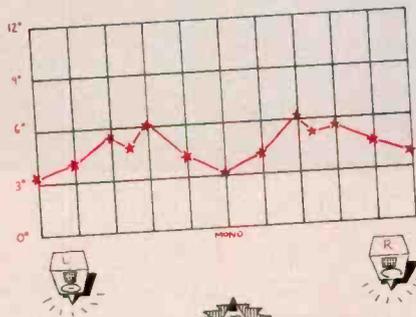
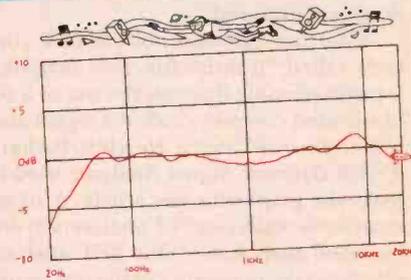


IMAGE SIZE VS. LATERAL POSITION

## ABOUT THE dBW

Forget it—we finally gave up on it about ten years ago.



ROOM RESPONSE W/CBF

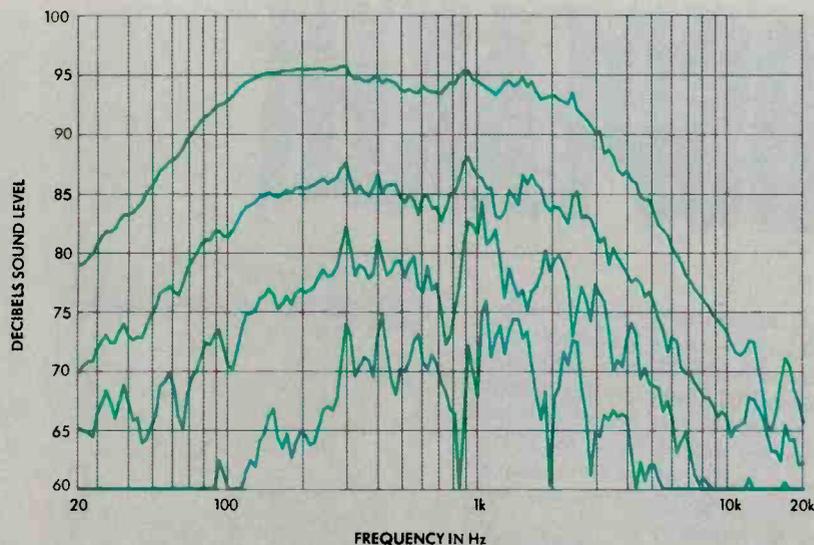


FIGURE 1. AS A MICROPHONE IS MOVED AWAY FROM A WOOFER, THE MEASURED WOOFER RESPONSE ROUGHENS CONSIDERABLY DUE TO THE INFLUENCE OF ROOM REFLECTIONS.

(CONTINUED FROM PAGE 55) waves and thus will not produce such jagged response curves. And narrow response peaks and dips can be inaudible, depending on their width, amplitude, frequency, and spacing across the audible spectrum. So by careful adjustment of the bandwidth of the analyzer, a rough curve can be smoothed enough to find response slopes and peaks more truly characteristic of the speaker's sound.

A more recent addition to the battery of in-room tests is the FFT impulse response. FFT stands for Fast Fourier Transform, which is a mathematical method useful for calculating frequency response from a speaker's reaction to very short clicks (impulses, typically of a few dozen microseconds in duration). FFTs allow separate analyses of the direct and the reflected sound and give valuable information about transient response that cannot be determined using noise or sine-wave signals. Combining an FFT with a process called "windowing" enables the engineer to reduce the influence on the response curve of reflections considered unimportant (usually the later ones). In effect, windowing quickly and automatically cuts the test microphone output immediately after the speaker's direct sounds (and maybe a few early reflections) are captured.

A further extension of the FFT concept, called "transfer function analysis," is made possible through the use of a sophisticated computer called a signal analyzer—in our case, a Hewlett-Packard 3562A Dynamic Signal Analyzer used to make the graphs for this article. A signal analyzer is really two FFT analyzers in one box, and then some. One FFT analyzer calculates the properties of the test signal, while the second works on the speaker output. The computer can display one or both or the difference between them.

This gives all the functions of a regular FFT analyzer, without requiring the use of clicks as test signals. A state-of-the-art analyzer like the Hewlett-Packard provides a variety of digitally synthesized test signals. The engineer can select which signal will best pinpoint the information desired. In fact, actual music signals can be used to test the speaker response while still separating the effects of room reflections, because the system uses a before vs. after comparison technique.

A somewhat more convenient test signal than music is a short burst of noise. The top trace of Fig. 3 is such a test signal, and the bottom trace is a speaker's response to it, complete with lingering room reflections after the pulse ends. Figure 4 shows the speaker's room response calculated from these two signals by the analyzer. Pretty messy. To make things more understandable, the analyzer can

apply windowing to yield the results shown in Fig. 5. Windowing makes it easier to see important aspects of the speaker's performance, such as the rising high-frequency response and the tweeter resonance at 16 kHz.

## NEW DIRECTIONS

GRAPHS LIKE THESE ARE USEFUL ONLY IF they help tell what you will hear when the speaker plays music. More and more attention is now being focused on ways to relate speaker measurements to sound quality. To do this, engineers are turning for help to the field of psychoacoustics. Because it concerns how the ear and brain process sound together, psychoacoustic research can suggest ways to process or evaluate measurement data to better correlate with the listening experience. The main problem to be solved is that simple microphones do not "hear" like the ear-brain system; the solution will involve the creation of computer-aided measuring systems programmed to simulate parts of the human hearing system.

One important technique that sprang directly out of psychoacoustic research is called critical-band filtering. This is a method of reprocessing frequency-response data to smooth out, in a manner similar to that used by the human ear, a typical curve's multitude of peaks and dips. In this way, it is possible to determine just which frequency-response aberrations are likely to be audible and which are not. Measurements made on a  $\frac{1}{3}$ -octave basis are a crude approximation of critical-band filtering, because the width of a critical band (essentially the bandwidth to which each sound-detecting hair cell of the inner ear responds) is about  $\frac{1}{3}$  octave.

A second psychoacoustically based (CONTINUED ON PAGE 60)

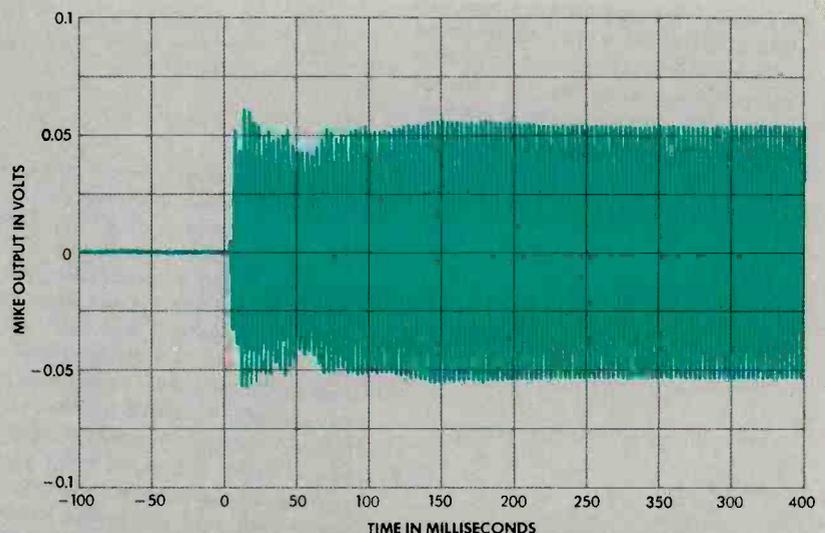


FIGURE 2. THE LEVEL OF A 300-HZ SINE WAVE TAKES TIME TO STABILIZE IN A LISTENING ROOM BECAUSE REFLECTIONS ALTERNATELY ADD TO AND SUBTRACT FROM THE DIRECT SOUND.

# ENERGY 22

The Energy 22 Pro Monitor has been hailed by critics as one of the major loudspeaker design breakthroughs of the last decade.

In fact, the Energy 22 may well rank as a standard against which other speakers should be judged. Audition either the Energy 22 Pro Monitors or the Reference Connoisseurs and we think you'll agree that they are not only the most exciting speakers you've ever heard, but "a stunning achievement" indeed!



FOR THE ULTIMATE EXPERIENCE, SPECIALLY SELECTED ENERGY 22 COMPUTER MATCHED DRIVERS AVAILABLE IN THE ENERGY 22 REFERENCE CONNOISSEUR MODEL PICTURED ABOVE. CUSTOM FINISHED HAND LAMINATED HARDWOOD VENEERS AVAILABLE IN BLACK, BURNING PIANO, RED HIGH GLOSS MAHOGANY, FINEST WOOD, TEAK, OAK, WALNUT, AND BLACK PEBBLE.

## "A STUNNING ACHIEVEMENT"

### Top Retail Experts Personal Views About The Energy 22

**New York, New York, The Listening Room, Ron Mintz – Owner.** "As one of the first dealers in the U.S. to realize the quality of the E-22, we continue to be amazed by the imaging and spaciousness of this speaker of such compact size & price."

**Hicksville, Long Island, New York, Designatron, John Thomas – Manager.** "Never before have we experienced a speaker system which exhibits the level of realism that the Energy 22 provides. The excitement generated by Energy speakers is only exceeded by the pleasure of owning them. The Energy 22 sets a reference standard by which all other speakers must be judged."

**Washington, D.C., Audio Associates, Mike Zazanis – Owner.** "The ENERGY 22 is a very musical speaker at a very inexpensive price that easily could cost a lot more money."

**Chicago, Illinois, Pro Musica, Ken Christianson, John Schwarz – Co-owners.** "The Energy 22 Reference Connoisseur & Pro Monitors simply outperform the competition. Musically satisfying to the most demanding listeners."

**Miami, Florida, Audio By Caruso, Don Caruso – Owner.** "The REFERENCE CONNOISSEURS are among the most neutral, uncolored, speakers we have found!!! They provide very relaxing listening."

**El Paso, Texas, Sound Room, Mark Pearson – Owner.** "Energy 22 pro monitor is the most three dimensional speaker ever."

**Phoenix, Mesa, Arizona, HI FI Sales, Dave Ross – G. Mgr.** "ENERGY 22. One of the most accurate, best imaging speakers we have ever heard."

**Los Angeles, California, Christopher Hanson Ltd., Christopher Hanson – Owner.** "The Energy 22 is very musically involving - 'Absolutely Brilliant!'"

**San Diego, California, Stereo Sound Co., Bob Kokley – Owner.** "Over the years we have heard many promises of new breakthroughs in speakers with disappointing results. The ENERGY 22 is one of the only products which performed beyond those promises. A job well done!"

**Berkley, California, The Sounding Board, Jeff Smith, Jim Serena Co-Owners.**

"The Energy 22 is an outstanding speaker. What's incredible is the value, compact size and its performance level."

THE DEALER'S #1 CHOICE

# ENERGY 22

Energy Loudspeakers, 135 Torbay Road, Markham, Ontario  
L3R 1G7 - (416) 475-0050 • TLX 06-986689

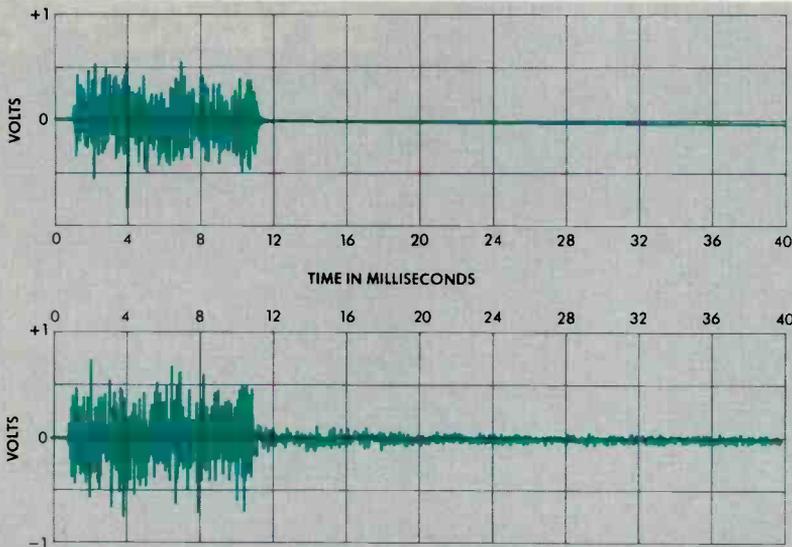


FIGURE 3. A SPECIALLY GENERATED BURST OF PSEUDORANDOM NOISE CAN BE USED TO TEST A SPEAKER (TOP). A MICROPHONE WILL PICK UP THE NOISE PLUS ROOM REFLECTIONS (BOTTOM).

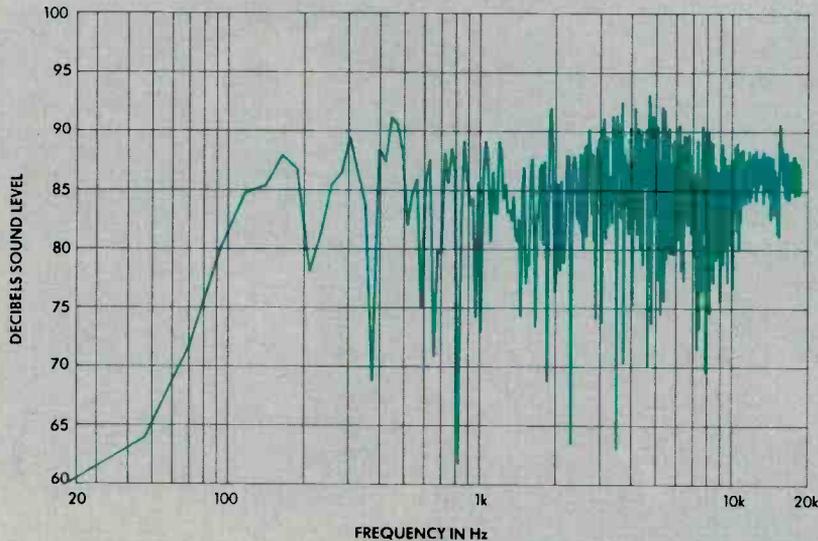


FIGURE 4. A COMPUTING SIGNAL ANALYZER CAN EXTRACT FROM A NOISE SIGNAL THE FREQUENCY RESPONSE OF A LOUDSPEAKER. REFLECTIONS CAUSE MUCH OF THE CURVE'S ROUGHNESS.

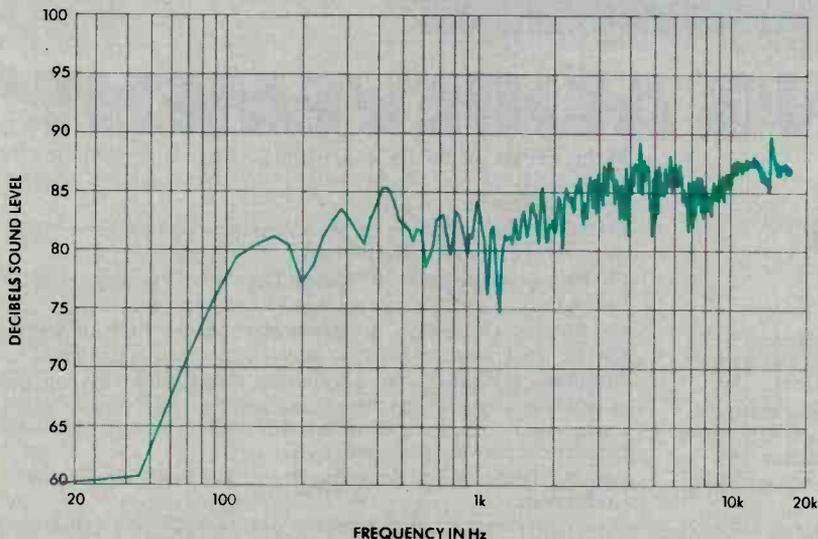


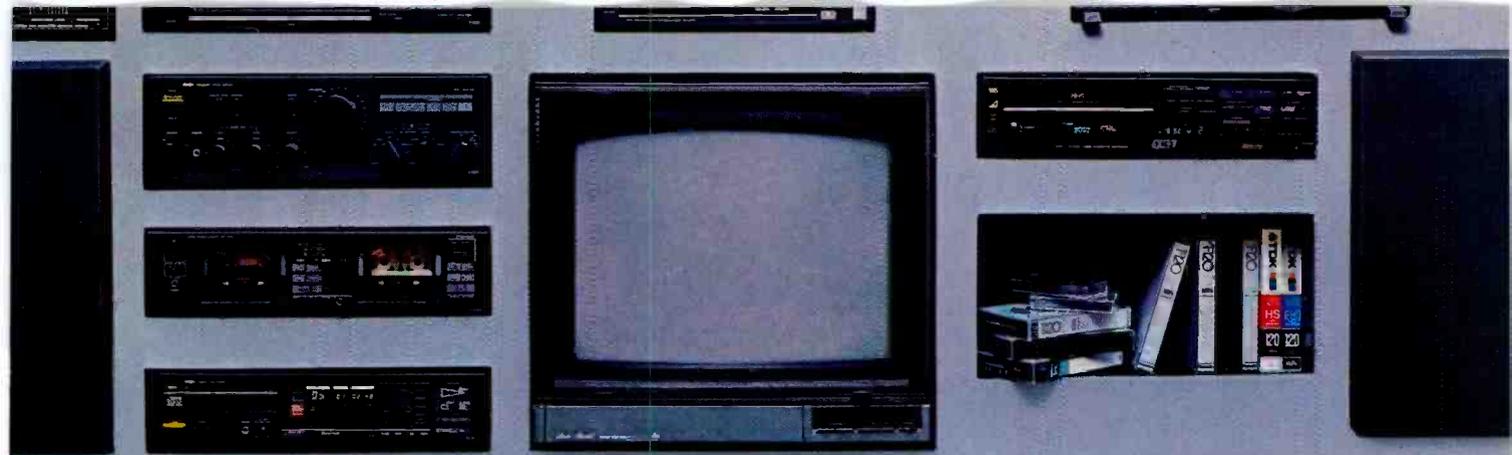
FIGURE 5. WINDOWING REMOVES THE EFFECTS OF ROOM REFLECTIONS FROM THE RESPONSE CURVE AND LEAVES THE AUDIBLY IMPORTANT DETAILS OF THE MEASUREMENT VISIBLE.

(CONTINUED FROM PAGE 59) testing technique is an advanced form of windowing sometimes called echo weighting. Rather than simply eliminating room reflections from a frequency-response measurement, it is possible to include them to the degree that they actually effect the perceived sound. As with critical-band filtering, echo weighting requires the latest in computational signal-analysis hardware and so is just beginning to catch on with loudspeaker designers. There is also some debate as to how exactly one should add the reflections to the direct-sound data so as to best indicate the reflections' influence on sound quality.

Another area in which psychoacoustics lends a hand is the evaluation and control of stereo imaging. Though a well-known effect, imaging is still somewhat of a mysterious process to designers, and until recently there were few good perceptual theories about what makes a speaker better or worse in this respect. Today, some engineers are using special microphones built into the ears of a plastic model of a human head, combined with signal analysis and psychoacoustics theory, to create speaker designs that specifically address stereo imaging.

Not all recent developments rely completely on new psychoacoustic theories. For example, Dr. Floyd E. Toole, working at Canada's National Research Council, recently published the results of a major research project linking loudspeaker measurements to listener preferences. Dr. Toole's work suggests methods for obtaining and evaluating detailed, but straightforward, frequency-response curves that appear to relate very well to listener reactions.

We are, I believe, poised at a turning point in the history of loudspeaker development. Engineers are ready to take the next big step toward unraveling the complexities of speaker sound: how a speaker interacts with the room and the human hearing system. For an illustration of how some of the new ideas might be developed, take a look at HIGH FIDELITY's archives for the year 2001 and examine the test report of an imaginary loudspeaker (see "2001: A Speaker Odyssey," which accompanies this article). The review includes five unfamiliar speaker measurements, and although none of these tests is in use today, they are not far-fetched fantasies—some may be in use by the end of this decade. Rather, they represent several directions loudspeaker testing and development may take in the coming years and show what a combination of new measurement technology and a better understanding of human hearing might hold for speaker testing and evaluation. Ultimately, we will reach a state wherein better-looking test results will (finally) always mean better sound quality. ■



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## FANS VS. CRITICS

SOME TIME AGO, A VETERAN MUSIC journalist and I sat listening to the Beatles' Christmas messages. To my amazement, my companion said she had never heard them before. When I voiced that amazement, she replied in utter seriousness, "But Ken, I'm not a fan, I'm a critic."

Funny, but I've always believed that critics *are* fans. Certainly, they *were* fans before they were published. The idea that critics are unique, solemn people only serves to widen the unnecessary gap between them and their readers. To me, "critic" simply means "a fan who writes about music." And it's obvious that no single critic's word is law. After all, critics disagree amongst themselves, and some recordings are multifaceted enough to elicit different opinions from different points of view.

Note, for example, "Glass Cutters," the double review of Philip Glass's *Songs from Liquid Days* in this issue. The recording is neither entirely classical nor entirely popular, but something of each, so it seemed appropriate to review the song cycle from each perspective. Naturally, such dialogue can sometimes turn into argument. Notice the opposing appraisals of the Roches' performances. K. Robert Schwarz: "Only Perry . . . and the Roches are entirely successful, partly because they sing Byrne's lyrics. . . . The Roches contribute the ethereal and witty vocal harmonies of 'Liquid Days (Part One).'" Mark Moses: "The Roches' choirgirl chirping misses all of the humor of Byrne's lyrics." Is Schwarz "right" and Moses "wrong" (or vice versa)? Of course not: two minds, two opinions.

All of the foregoing is admittedly very elementary, but it bears repeating, especially if we are to erase the "fans vs. critics" mentality. We need more critics who remember their origin as fans—and more fans who aren't afraid to hold up their own opinions in the shadow of critical pronouncements.

This is where *you* come in. From here on, this portion of "Medley" is an open column. Are you angry or enthusiastic about something in rock, jazz, country, or what-have-you? If so, send a 425-word article to Ken Richardson, Popular Music Editor, HIGH FIDELITY, 825 Seventh Ave., 8th floor, New York, N.Y. 10019. (Remember to make a copy for yourself; original manuscripts will not be returned.) We'll pay \$100 for each article we publish. Let's hear from you!

Ken Richardson

## LETTER FROM EUROPE

SO YOU THINK COMPACT DISCS ARE expensive? Well, think again. Making the rounds of record shops in both Salzburg and Paris, I found CDs selling for the equivalent of \$21, or about \$5.00 to \$6.00 more than they sell for in the United States. Are the CDs we buy in the States being dumped in an effort to build the market, or are the ones in Europe—where CDs are made—being priced artificially high? Since the demand is so great in the U.S., the latter explanation is more likely. And common sense indicates that U.S. prices may soon be rising.

What is going onto the discs is another matter. EMI, stung perhaps by criticism of its short measure on several releases, is recouping a significant percentage of them, now that it has its own manufacturing plant in Swindon. EMI's Peter Alward told me in Salzburg that the plant has been on line for two months and that the label's chronically tight CD supply will at last be easing. He noted with amusement that his forthcoming recording of Wagner's *Ring* with Bernard Haitink, announced on this page in the May issue, will have as its Sieglinde the same soprano who is engaged to sing the role of Brünnhilde on the new Deutsche Grammophon recording of the *Ring*: Hildegard Behrens. (Alward has engaged Eva Marton as his Brünnhilde.)

Deutsche Grammophon was also very much in evidence at the Salzburg Festival, touting its new recordings of Beethoven's *Missa Solemnis* (with Herbert von Karajan conducting the Berlin Philharmonic and the Wiener Sangverein, joined by soloists Lella Cuberli, Trudeliese Schmidt, Vinson Cole, and José van Dam), the live performances of which were the big event of this summer's festival, and Mozart's *Don Giovanni* (Karajan/Berlin, with Samuel Ramey in the title role and a cast including Anna Tomowa-Sintow, Agnes Baltsa, and Kathleen Battle), which will be the highlight of next summer's festival. Karajan will perform the opera without Mozart's *vaudeville* ending; the recording, however, will have the finale Mozart wrote and presumably wanted. By all odds, though, the performance next summer will *not* have the Donna Elvira who made the recording and whom Karajan presumably wanted: Baltsa. She and the maestro had a run-in prior to this summer's performances of *Carmen*, and she disappeared from that show. A lamentable loss, for Baltsa is the Carmen of our day . . . but not a surprising loss in view of Karajan's history with singers.

Ted Libbey



E D I T E D

B Y

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by  
**ENERGY**

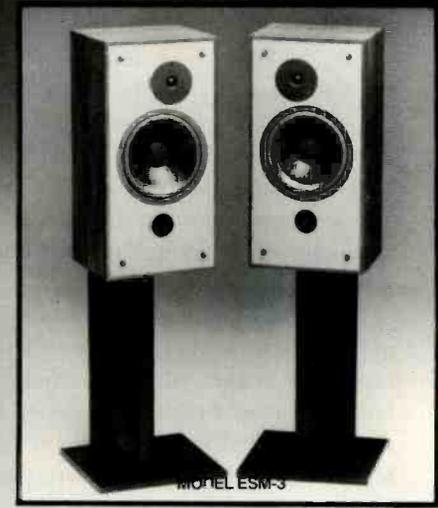


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**High Fidelity** January 1986, on the ESM-2

*"exceptional overtone balance ... imaging was just about the best I've heard ... excellent dynamic range ... it sounds great ... no real compromises in its design ... anyone looking for a \$1,500.00 to \$2,000.00 system would be foolish not to carefully audition the Energy ESM-2 ... amazing at the price."*  
**Audio Ideas**, 1985 edition, on the ESM-2

THE #1 CHOICE



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# CLASSICAL

*American orchestras are disappearing from the recording studio. Is there any hope?*



COURTESY CHICAGO SYMPHONY ORCHESTRA

THE INDUSTRY FOCUS ON SELLING CONDUCTORS, NOT ORCHESTRAS, FINDS AMERICAN ENSEMBLES AT A DISADVANTAGE. THE SINGLE EXCEPTION IS GEORG SOLTI WITH THE CHICAGO SYMPHONY ORCHESTRA (ABOVE).

## ENDANGERED SPECIES

**A**T A BACKYARD BARBECUE A DOZEN OR SO years ago, Peter Pastreich and James Cain, the executive director and manager, respectively, of the St. Louis Symphony Orchestra, were glumly searching for solutions to two seemingly distinct problems. First, their board was offering only a small salary increase to the players, and they feared this would precipitate a long strike. Second, despite some memorable recordings under Vladimir Golschmann and André Previn, record companies showed little interest in hiring the orchestra. Cost factors were persuading the labels, both foreign and domestic, to engage orchestras in Europe for recordings. Pastreich and Cain feared that their orchestra would disappear entirely from the recording studio and become just a

memory for record buyers.

In one of those creative bursts that can sometimes reshape an industry, Pastreich outlined to Cain a single solution to both problems: the electronic media guarantee, or EMG. The orchestra players would be offered a fatter paycheck than management had intended—an additional \$40 a week—in exchange for which they would provide a specific number of hours in the recording studio. With session fees thus underwritten by orchestra management, a record company could save \$30,000 to \$40,000 (more than half the cost of a typical record) by working with St. Louis. The St. Louis management would eventually recover some of this EMG in record royalties, and their orchestra—an American orchestra—would

BY DAVID RUBIN

*David Rubin is chairman of the journalism department at New York University and a noted writer on the business of the performing arts.*

once again be recording.

With the board-approved EMG in his quiver, Pastreich avoided a strike and signed a contract with Vox that resulted in such long-lived budget sets as Gershwin's orchestral works and the complete symphonies of Rachmaninoff and Schumann. Orchestras in Cincinnati and Minnesota also adopted the EMG for a while, and it is currently being put to good use by orchestras in Houston and Atlanta, among other cities.

Clever as the EMG is, however, it has not enabled American orchestras to remain astride the classical record industry as they were in the days of Leonard Bernstein, George Szell, Eugene Ormandy, Charles Munch, Arthur Fiedler, and Fritz Reiner. While the EMG has permitted some second-tier orchestras to gain at least a temporary visibility in the marketplace, and has given life to such smaller record labels as Vox and Pro Arte, it has not been able to halt the eclipse of the American orchestra in the studio. Indeed, American orchestra managers might as well be selling overpriced American steel or automobiles as their own orchestras, so competitive has the world marketplace become.

To determine just how total this eclipse is, HIGH FIDELITY closely examined its 1984 through 1986 annual listings of forthcoming releases, identifying which orchestras were employed in the making of all new orchestral records and all new records requiring an orchestra and soloist. Of 702 such releases announced by 58 labels, American orchestras were used in just 161, or 23 percent.

While the Vienna Philharmonic in this period was releasing a dozen new records a year, and the Royal Philharmonic, Philharmonia, and Concertgebouw were all averaging eight apiece, the best American showings were five or so a year from the Chicago Symphony and four from the Cleveland Orchestra. The New York Philharmonic, Philadelphia Orchestra, and Boston Symphony *combined* released about the same number of new records as did the London Philharmonic alone. The recording heartbeat in Los Angeles, Pittsburgh, Baltimore, and Minnesota was barely detectable, while orchestras of no greater stature in Rotterdam, London (the London Symphony Orchestra), Dresden, Leipzig, and Berlin (the Radio Symphony Orchestra, not the famed Berlin Philharmonic) were each pumping out three or four new records annually.

Opera and vocal recital records were not included in this survey. Otherwise, the figures would have been even more alarming, because European orchestras are almost always used in such projects.

Angel EMI, Philips, and CBS have been doing most of their recording in Europe. RCA has gradually dropped out of the business altogether. Though it abandoned its work in Chicago last year, Deutsche Grammophon has maintained a modest American presence in New York and with Orpheus, the chamber ensemble. Of the international la-

bels, Decca/London has been the most active in the U.S., recording regularly with Chicago, Cleveland, and, for a while, Detroit. Only Minneapolis-based Pro Arte, Cleveland-based Telarc, and New York-based Nonesuch are, on the evidence, committed to American groups for the majority of their releases.

Confirmation of these findings, drawn from a different data base, comes from Albert K. Webster, managing director of the New York Philharmonic. A 1977 private survey of 15 major American orchestra managers revealed that their orchestras spent 553 hours in the recording studio. By 1982, Webster says, that figure had dropped to 284 hours.

How have European orchestras managed to drive their American cousins from the recording scene? Any explanation must start with the cost of labor. The current contract negotiated between the record companies and the American Federation of Musicians stipulates that a player be paid \$208.17 for a three-hour recording session and \$277.59 for a four-hour session. These fees are standard across the country, regardless of the quality of the orchestra. They are at least *twice* the price of hiring European players. The fees have been increasing five percent a year in each of the last three years, and they moved up faster than that in the inflationary late 1970s and early 1980s.

While some in the music business claim that American orchestras offset this considerable differential by working faster and producing usable material more quickly, others challenge this. One doubter is Christine Reed, vice president for artists and repertoire at CBS Masterworks. "I have seen one American orchestra," she says, "consciously make mistakes to force us into overtime and another that blatantly screwed around at the beginning of a session and didn't get down to work. You really can't generalize about it," she says. "Some orchestras just work better than others."

The union contract also requires that orchestra members *not* called to play be paid for two hours of studio work. This sort of featherbedding makes recording Mozart, Haydn, Schubert, and other composers who did not write for the 100-plus players of a modern orchestra particularly expensive in the U.S. (For confirmation, check the June 1986 SCHWANN record and tape guide listings for available recordings of Mozart's Symphony No. 41, for example. The only two current [made in the last decade] American products are from the Chicago Symphony and the Los Angeles Chamber Orchestra. By contrast, more than a dozen relatively new recordings are listed from European groups.)

High session fees are not the whole story, however. Reed points out that record companies today are selling conductors, not orchestras. "It's the Berlin Philharmonic *with Herbert von Karajan* that sells," she says, "and not necessarily the Berlin with Daniel Baren-

boim or with Seiji Ozawa." This emphasis on conductors does not work to the advantage of American orchestras. The only bankable conductor on the American scene who is associated with a particular orchestra is Georg Solti in Chicago. The other hot combinations are all abroad: Karajan and Berlin, Charles Dutoit and the Montreal Symphony Orchestra, Neville Marriner and the Academy of St. Martin-in-the-Fields, Bernstein and the Vienna Philharmonic.

"We are in a period where conducting talent is at a low ebb," says Robert Woods, president of Telarc. "American orchestras suffer from the Mehta/Muti/Mata problem. The public can't sort these guys out."

A third obstacle is that European-based labels are making the majority of the new releases, so logistics dictate selection of a European orchestra. In the 1984-86 period under study, for example, Decca/London, DG, Angel EMI, Philips, and Erato released 265 new orchestral records; by contrast, CBS, RCA, Telarc, Nonesuch, and Pro Arte, all based in the U.S., produced just 131.

The European and Japanese markets are also much more important than they used to be, accounting, in the case of CBS, for more than 60 percent of sales. Their wishes cannot be ignored, and Reed detects consumer resistance to American orchestras. She maintains that CBS ended its longtime exclusive agreement with the New York Philharmonic in 1980 because the label "couldn't give away the orchestra and Zubin Mehta in Europe." By contrast, American buyers, rather than support their own, are still impressed by imports (which is why so many records prominently display an import sticker). Call it the Volvo syndrome, although American orchestras are certainly better performers than American automobiles.

With all these obstacles, the wonder is that American orchestras record at all. Patriotism is one factor. "I'm an American label. I'm based here," says Pro Arte's vice president, Steve Vining. "And the playing rivals that of the Europeans on their good days." Telarc's Woods agrees: "We are devoted to the [local] Cleveland Orchestra, and we made a corporate decision to support it." Some conductors, such as Solti and Riccardo Muti, have sufficient clout to convince, respectively, Decca/London and Angel EMI to record them with their American orchestras in certain repertory.

But the cost of recording must be at the heart of such deals. Through creative financing, some orchestra managers can compete with Europe despite the high musicians' fees. The EMG is one way. (The Houston Symphony, for example, is underwriting 30 hours of recording each year.) Another solution is to fiddle with royalty payments. Kenneth Haas, general manager of the Cleveland Orchestra, explains: "We do not directly subsidize the cost of the recording sessions. But we do take a reduced royalty so that the recording company can recover all

or part of the session costs over a specific period of time. If the record is a big seller, the company can recover all these costs—a small seller, they cannot."

In St. Louis, orchestra manager Joan Briccetti maintains a small EMG fund and also negotiates royalty deals. "The record companies pay as much up front as I can get them to," she says, "and then we work out a royalty agreement to recover the rest of their costs. We negotiate the price [for a record] upon which they calculate the royalty, whether it applies from the first record sold, whether the company can also recover the costs of taping, and other issues. Each negotiation is different."

It is now clear to the top orchestra managers in the U.S. that this is how the game must be played. The days of the record companies paying all session costs plus a royalty are over. So why isn't everyone playing?

"We're basically in the business of losing money wisely," says the New York Philharmonic's Webster. "How wise is it to lose money on recordings? I don't know the answer to that."

Now that making records is, at best, a break-even financial proposition, no orchestra is going to do it for the money. Even with royalties still coming in from recordings made 15 and 20 years ago, Webster reports income of only \$400,000 to \$500,000 in a total budget of \$19 million, and that figure will decrease as the catalog continues to age (although Compact Disc reissues should help for a while). The Chicago Symphony's executive director, Henry Fogel, puts royalty income at a mere \$125,000 in a budget of \$20 million; Cleveland's Haas says it is \$183,000 in a budget of \$21 million.

In today's environment, there clearly must be other reasons to record, and each orchestra manager has his or her favorites.

Gideon Toeplitz in Houston: "I learned over the years that orchestras need challenges. It is a challenge to go into the studio and produce a good record. It brings up the level of the playing, and this level will become the new standard for the orchestra. So we do it for artistic reasons." Toeplitz adds that recordings also can encourage contributors to the orchestra. "Recording is a point of pride for our supporters and an easy way to measure how well we're doing."

Fogel in Chicago: "Music directors make records to document what they've done with an orchestra. If you don't record, they won't come. You'll lose the best conductors." He also believes that regular recording, and the session fees that come with it, act as a recruitment tool for new players. "I just got a brass player away from Philadelphia, and one factor was our level of recording and how that would supplement his salary."

Briccetti in St. Louis: "New recordings help to reverse the decline in interest in classical music. It's an audience-building issue. Plus, if you don't record, you lose some of the finest performances in the world."

Vining of Pro Arte is rather more blunt.



LEONARD SLATKIN, MUSIC DIRECTOR OF THE ST. LOUIS SYMPHONY ORCHESTRA (RIGHT), WORKS WITH PRODUCER DAVID JAY SAKS. ST. LOUIS RECORDINGS ARE SUPPORTED BY A SMALL EMG FUND AND ROYALTY DEALS NEGOTIATED BY ORCHESTRA MANAGEMENT.

"The best orchestras *have* to record because it won't take very long for the image of The Big Five to become just a memory for the consumer." By extension, how long will American orchestras be asked to tour Europe and play at major festivals if foreign audiences cannot buy their performances or hear them on the radio?

In contract negotiations in November, the American Federation of Musicians is unlikely to lower its session fee in any meaningful way without guarantees of more work from the record companies, and such guarantees will not be made. The union fears that if it negotiates a lower fee, European orchestras will respond by cutting their fees, so that American players will end up making less money for the same amount of work.

The union has made other types of concessions in the last few years, however. It is now somewhat cheaper to make live recordings and to record new music. A special chamber-orchestra provision lowers the four-hour session rate for 24 or fewer players from the standard \$277.59 per player to \$216, which helps Orpheus. Any additional relief to come from the union in the current negotiations is likely to be of this nature.

The record companies are not about to alter their bottom-line approach, particularly since they are holding the most important negotiating card: More orchestras would like to record than they, or the marketplace, can possibly accommodate. "We're running a business," says CBS's Reed—a revolutionary statement in the often dreamy world of classical music. "I know that some of the or-

chestras are resentful that we're not throwing money at them. But it was an oversight at CBS that we were involved with the New York Philharmonic for so long and ridiculous that we weren't recording with the Berlin Philharmonic or the Concertgebouw." Neither sentiment nor history will change this view.

That leaves the orchestra managers. They will have to decide if they really want to record, how much, and how willing they are to meet European terms. Deals can be made, but they will require significant underwriting with an American conductor or else a very hot conductor who is closely identified with an American orchestra and who can sell the product.

Short-term handicappers trying to dope out any American recovery might keep their eye on the following developments. How successful will Angel EMI be with its projected Beethoven symphony set starring Muti and the Philadelphia? With André Previn as the bait, can Ernest Fleischmann, executive director of the Los Angeles Philharmonic and a man widely respected for his financial acumen, lure the record companies back to the West Coast? Can Telarc make money with Christoph von Dohnányi in Cleveland? Will Pro Arte's philosophy of recording pop and standard pieces with lesser-known orchestras and conductors in Houston, Dallas, Rochester, Atlanta, and Utah work?

"The American orchestras have missed the CD boom, or at least a major part of it," says Reed. This is no time for the faint of heart.

# THE CD SPREAD

## MINI-REVIEWS OF THE LATEST COMPACT DISCS

BY ROBERT E. BENSON, THOMAS L. DIXON, IRVING KOLODIN, ROBERT R. REILLY, K. ROBERT SCHWARZ, AND JAMES WIERZBICKI

### MOZART, BEETHOVEN SYMPHONIES

AS FLUTIST AND RECORDER PLAYER, FRANS BRÜGGEN is famous for the radical phrasings and intonational shadings he applied to Baroque music long before such devices were fashionable among champions of "authentic" performance practice. As conductor of the mainstream Classical repertory, he's not nearly so eccentric. In fact, his newly recorded interpretations of Mozart's Symphony No. 40 and Beethoven's Symphony No. 1 are remarkable mostly for how straightforward they sound when compared with performances by several of the English early-music orchestras. Uncluttered and unaffected, these are nonetheless powerful readings—recorded as they were immaculately delivered by Brüggens's own Holland-based Orchestra of the 18th Century before live but quiet audiences in Amsterdam and Utrecht in May 1985. Playing time: 56:32. (Philips 416 329-2.) *J.W.*

### SMETANA (ORCH. SZELL): LONDON SYMPHONY, SIMON

GEORGE SZELL FELT THAT THE EMOTIONAL content of Smetana's Quartet No. 1, in E minor, subtitled *From My Life*, could better be realized by a full symphony orchestra. In 1940 he orchestrated the work and later recorded it with his Cleveland Orchestra—a performance available on an early Epic LP, which long has been a treasure in my collection. Now Szell's orchestration has been newly recorded with Geoffrey Simon conducting the London Symphony Orchestra; it is coupled with orchestral excerpts from Smetana's opera *The Bartered Bride*. *From My Life* is highly autobiographical, written two years after the composer lost his hearing and during the same period in which he wrote his masterpiece, *Má Vlast*. Smetana called the quartet "a remembrance of my life and the catastrophe of deafness," the latter well depicted in the final movement.

There is some superb music here. Many listeners doubtless will enjoy the second movement polka; the exquisite, tender love scene of the third movement; and the boisterous finale that is interrupted by the prolonged high E, Smetana's chilling evocation

of the tinnitus that foretold the loss of his hearing. Simon's performance is more leisurely than Szell's (about two minutes longer overall), and a little more tension would be welcome. But it is beautifully played. From *The Bartered Bride* we have the familiar overture, polka, furiant, and "Dance of the Comedians" plus two excerpts that are less frequently encountered: "Dance of the Villagers" and a brief fanfare. Chandos's reproduction is typical of the company's usual high quality. Playing time: 55:08. (Chandos CHAN 8412.) *R.E.B.*

### STRAVINSKY WORKS: LONDON SINFONIETTA

ALTHOUGH STRAVINSKY NEVER REACHED Poulenc's level of preternatural whimsy, his *Divertimento*, *Suites* Nos. 1 and 2, and *Octet* contain delectable terrestrial delights. Collected on a new London CD, they receive performances from conductor Riccardo Chailly and the London Sinfonietta that never strain the material, but unfold its full fancy with a charming and natural ease. The *Divertimento* is a suite extracted from *Le Baiser de la fée*, Stravinsky's ballet based on piano pieces and songs by Tchaikovsky. As one might imagine from its source material, this is Stravinsky at his most mellifluous. The music of the two *Suites* is alternately tender and spiky, quickly changing gears with an easy exuberance. *Suite* No. 2 has one of the most delightfully infectious, quirky calliope tunes I have ever heard; indeed, the spirit of both *Suites* recalls E. E. Cummings's line: "damn everything but the circus." The *Octet*, from 1922, inhabits the same world and supposedly was composed after Stravinsky heard the piece in a dream. Two short bonuses on this CD are *Three Pieces* for solo clarinet (1919), the last of which is vaguely reminiscent of the solo in Copland's *Concerto for Clarinet*, and the very short *Fanfare for a New Theatre*, the only selection not from Stravinsky's neoclassic period, written for the opening of Lincoln Center's New York State Theater in 1964.

For anyone whose acquaintance with Stravinsky skips from the musical meltdown of *Le Sacre du printemps* to the dodecaphony of *Agon*, this delightful potpourri of his roman-

tic neoclassicism will be a revelation. Those who know these masterful miniatures will be entranced by Chailly's deft touch and the very beautiful playing of the London Sinfonietta. Recorded in 1980 (why the six-year wait?), the sound is simply superb. Playing time: 52:38. (London 417 114-2.) *R.R.R.*

### MOZART, SCHUBERT: LUPU, PERAHIA

THE PERFECTION EVEN OF MOZART'S *GALANT* music provokes longings that can belie its sparkle and lightness. Although Alfred Einstein tells us of the Sonata in D for Two Pianos, K. 448, that "no cloud obscures its gaiety," the delight it induces creates, ironically, the sense of loss that the imperfect feel when faced with the perfect. This music, if you will, is untouched by original sin. It is the music Karl Barth suggested the angels play *en famille*.

Schubert clearly did not escape original sin, as the sometimes overwhelming melancholy in his music tells us. (Certainly his last two piano sonatas, D. 959 and D. 960, are among the most sublime, heart-rending musical utterances ever composed.) Only slightly lower on the slopes of music's Mount Parnassus is his *Fantasia*, Op. 103, featured here, another product of his last year (1828), and one of the greatest works ever written for piano four hands. This deeply ruminative music keeps ingeniously folding back on itself through the repeated statement of the opening F minor motif, creating a moving sense of fatality and resignation.

Compositions of this caliber are beyond definitive performance. Yet Murray Perahia and Radu Lupu succeed by bringing singing lines and, most remarkably, exquisite tonal shadings to both works. The Mozart is particularly successful and conveys a nearly superhuman perfection. If I slightly prefer it to the Schubert, it is from wondering whether these two artists may not lack the final profundity that pianists like Wilhelm Kempff and Ivan Moravec would bring to the *Fantasia*. That speculation need not deter anyone from enjoying this superb CD, which has excellent sound to match. Playing time: 42:04. (CBS MK 39511.) *R.R.R.*

## **AMSTERDAM LOEKI STARDUST: VIRTUOSO RECORDER MUSIC**

THE SOURCE OF THE "STARDUST" PART OF THE ensemble name is not given in the liner notes, but at least we know they borrowed "Loeki" from a character: a lion that lately figured big in a Dutch television commercial. Just as the players' collective name suggests a vital interest in nonconformity, so does their performance style. To be sure, the four young artists who make up the Amsterdam Loeki Stardust Quartet know exactly what they're doing when it comes to the scholarly details of the 16th-, 17th-, and 18th-century pieces (by Vivaldi, Frescobaldi, Palestrina, Locke, Gibbons, and Byrd) that make up their *Virtuoso Recorder* debut CD. Their delivery, though, is spiced with more insouciance than the early-music camp has ever known: The embellishments seem utterly fresh even on third or fourth listening; the super-fast, super-crisp articulations, like the sonics, are always dazzling. Playing time: 52:53. (Oiseau-Lyre 414 277-2.) *J.W.*

## **MOZART WORKS FOR TWO PIANOS**

ORIGINALLY WRITTEN FOR THE YOUNG LADIES of the Lodron family of Salzburg, the Concerto in F for Three Pianos, K. 242, subsequently was reduced by Mozart to a version for two pianos, which is offered on this new release taken from Alfred Brendel's traversal of the complete Mozart piano concertos. This beautiful, flowing piece is well performed by Brendel and his able English partner, Imogene Cooper, as is the even better, but brief, Concerto in E flat for Two Pianos, K. 365. Both are admirably accompanied by Neville Marriner and the Academy of St. Martin-in-the-Fields. Playing time: 46:34. (Philips 416 364-2.) *I.K.*

## **MOZART, SCHUBERT MASSES: SLOVAK PHILHARMONIC**

MOZART'S *CORONATION* MASS IN C, K. 317 (1779), and Schubert's Mass in G, D. 167 (1815), make an ideal pairing, for both are specimens of church music written when their composers were still youthful prodigies. But though the *Coronation* Mass is an unquestioned masterpiece, the Mass in G is distinguished only intermittently by typically Schubertian lyricism and harmonic color. Otherwise, it can seem pompous and mock-sincere, hampered by rather cavalier and perfunctory text setting.

Only soprano Magda Kalmár makes this recording impossible to recommend without reservation. Her vocal tone is pinched and thin, and she demonstrates an almost unbearable tendency to sharpen pitches, which distorts not only her solos but the ensembles as well.

Yet it would be wrong to dismiss this otherwise fine release. The Slovak Philharmonic Chorus and Orchestra, under János Ferencsik's skilled direction, offer lusty and full-throated performances that never fail to

capture these masses' wide dynamic and emotional range. The choral tone is varied and well-blended, the other three soloists—Jutta Bokor, Attila Fülöp, and Kolos Kovács—are excellent, and the large, conventional instrumental and vocal resources are powerful without seeming anachronistic. Moreover, Schubert's Mass in G is otherwise unavailable on CD. Playing time: 48:33. (Hungaroton HCD 12513-2. Distributed by Qualiton Imports.) *K.R.S.*

## **ROUSSEL ORCHESTRAL WORKS: FRENCH NATIONAL, PRÊTRE**

THE MAJOR AND CONSIDERABLE ATTRACTION of this new release is that it contains the complete *Bacchus et Ariane* ballet of Albert Roussel, not just the more frequently encountered Second Suite. Roussel, like Delius, has for far too long been considered a kind of "cultivated taste." But even a listener coming to this score for the first time should find it an absorbing experience, for the music is at least on a par with Ravel's more famous *Daphnis et Chloé*.

There is, however, a darker note for those already familiar with the work. This performance of the ballet by Georges Prêtre and L'Orchestre National de France, it must be said, in no way eclipses the account recorded by Jean Martinon for Erato. Nor is Martinon's two-decades-old version of the Second Suite, on a stunning RCA LP, matched in any way. Charles Munch also recorded the suite, once in the 1950s on a mono LP and later on an all-but-impossible-to-find French Lumen disc. All these versions deserve fresh life on CD; if that ever happens, they would rank above the account under consideration. However, lacking better, one must recommend for the moment Prêtre's version, which is paired with *Le festin de l'araignée* and *Fragments symphoniques*. The sound is fine, but it misses the overall warmth that would so enhance both masterpieces. All in all, with the best will possible, a highly qualified recommendation. Playing time: 53:51. (Angel EMI CDC 47376.) *T.L.D.*

[A recording of the complete *Bacchus et Ariane*, performed by L'Orchestre de Paris under the baton of Charles Dutoit, is due for release this season on an Erato CD.—Ed.]

## **SHOSTAKOVICH SYMPHONY NO. 11**

LEOPOLD STOKOWSKI AND THE HOUSTON Symphony gave the American premiere of Shostakovich's Symphony No. 11 (1905) in April 1958 and recorded it for Capitol shortly thereafter. The notes accompanying this new Angel CD reissue of that album quote R. D. Darrell as hailing "this historic premiere recording of the Shostakovich Elevation," which is not true; EMI had already recorded it with the French National Radio Orchestra conducted by André Cluytens, with the composer in attendance. Stokowski's account originally was issued on two LPs, later appearing on a single budget-

priced Seraphim disc (and losing much of its dynamic range in the process).

In recent months, the recording has been digitally remastered and issued on both black disc and cassette. Presumably this CD is from the same new master. It sounds wonderful, with plenty of bass, and the remastering seems to have clarified the sound a bit. It also seems to have taken some of the bite out of the brass and readjusted balances as well. Surely the forte horn statements at the end of the finale are more pronounced on the original LP, which remains, for those fortunate enough to own it, a sonic marvel. One might question issuing on a full-priced CD a performance that currently is available on a black disc with a list price of \$6.98, no matter how fine or historic the content might be. But surely all admirers of Stokowski will wish to have this highly individual, resplendent performance. Playing time: 62:39. (Angel EMI CDC 47419.) *R.E.B.*

## **STRAVINSKY WORKS FOR VIOLIN AND PIANO**

THE BEST-KNOWN FRUITS OF THE WORKING relationship between Igor Stravinsky and violinist Samuel Dushkin are the 1932 *Duo concertante* and the 1933 *Suite italienne*, both of which are offered by violinist Cho-Liang Lin and pianist André-Michel Schub on this new CD. There's no attempt here to duplicate the spikiness of Stravinsky's and Dushkin's performance style. These smoother, more glossy readings are in their own right abundantly stylish and effective, though one hopes Lin and Schub will not wait long before addressing the familiar duo version of the *Pastorale* and the rarely heard arrangements of selections from *The Firebird*, *Mavra*, and *Le Rossignol* that also figured on the Stravinsky-Dushkin recital programs. An additional selection on the CD is the 1932 *Divertimento* based on music from the ballet *Le Baiser de la fée*. Playing time: 53:13. (CBS Masterworks MK 42101.) *J.W.*

## **HOUSTON SYMPHONY: AMERICANA**

SERGIU COMISSONA AND THE HOUSTON Symphony have a new Pro Arte release entitled *Celebrate America* that starts off with a rousing account of our national anthem. Other Americana follows: Gould's *American Salute*, Bagley's *National Emblem March*, a suite from Richard Rodgers's *Victory at Sea*, a George M. Cohan medley, Ives's *Variations on America*, and—perhaps in honor of the orchestra's origin—*Deep in the Heart of Texas* and *Yellow Rose of Texas*. There is room for a CD such as this, and Comissiona shows real imagination in his treatment of *National Emblem* and *The Stars and Stripes Forever*. (Additional selections: *America the Beautiful*, *God Bless America*, and Meredith Willson's *Seventy-six Trombones*.) Engineers and recording site are not indicated, and perhaps for good reason: The reproduction is shallow, characterless, and lacking in impact. Playing time: 52:16. (Pro Arte CDD 263.) *R.E.B.*

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CLASSICAL

REVIEWS

# ROSSINI'S "TANCREDI" REVISITED

**ROSSINI:**

**Tancredi.**

Ⓢ Horne, Cuperli, Palazzo Zaccaria, Marco di Nissa, Schüniger; Teatro La Fenice Orchestra and Chorus, Weikert, David Motley, prod. CBS Masterworks (3M 25073 D, 3).

THOSE WHO ALREADY KNOW *TANCREDI* WILL BE interested to learn that the performance in this album restores the opera's recently recovered tragic concluding scene.

The action of the libretto, after Tasso's poem *Gerusalemme liberata* (1575) and Voltaire's play *Tancredi* (1763), takes place in an 11th-century Syracuse besieged by Saracens. The leader of the Senate has commanded his daughter, Armenaide, to marry Orbazzano, a noble who has agreed to lead the army against the attackers. Armenaide, however, loves the Crusader Tancredi, whom Orbazzano banished as a child. Tancredi loves her, Armenaide sends him an obliquely worded letter urging him to liberate the city. Orbazzano intercepts it, and both he and her father misinterpret it as a betrayal of the city to the leader of the Saracens (who also wants to marry Armenaide,

MARIÛN HORNE: HER FACILITY FOR ORNAMENTATION WELL SUITS HER TO THE ROLE OF TANCREDI.

although he makes no appearance in the opera). Armenaide's father is compelled to sentence her to death.

Armenaide, meanwhile, comes upon Tancredi within the city, unrecognized as an adult except by her. She urges him to flee for his safety, but because she is unable to bring herself to tell him that she is marrying Orbazzano only in obedience to her father, he believes she is betraying him, too. Although he has Armenaide's death sentence lifted by duelling Orbazzano for her honor, he ignores her pleas for understanding; embittered, he goes into battle against the Saracens on behalf of Syracuse and is slain.

As Julian Budden observes, most *opera seria* of the period in Italy, with the exception of those drawn from classical literature, concluded with the happy resolution of such misunderstandings between characters. For *Tancredi*, then, Rossini originally wrote a happy ending: Tancredi's victory was followed by Armenaide's revelation to him of her dilemmas and subsequently by their marriage. Until recently, this conclusion was the only one that was known. However, for a revival a few months after the premiere, Rossini substituted an ending truer to Voltaire's play, one in which Tancredi had matters explained to him only as he lay dying after his victory over the Saracens. This departure from tradition displeased the audience, so Rossini discarded it. By the time he came to write *Otello*, three years later, he was sufficiently famous to do as he liked: to end a tragedy with the deaths of the principals (although even then he was asked, for a revival in Rome, to compose a final duet in which *Otello* and *Desdemona* patched things up).

Those who do not know *Tancredi*, but who do know Rossini's later operas, both comic and tragic, as well as the Italian comic operas of Mozart and the dramatic operas of 19th-century Germany, Austria, France, and Italy—operas in which the musical numbers arise, at least ostensibly, out of the developments of the plot—may wish to be alerted to some of the conventions of *opera seria* in order to be prepared for what may seem to be the comparative dramatic stasis of *Tancredi*.

In *Le Nozze di Figaro*, for example, Mozart uses the formal a-b-a structure of an aria like "Dove sono" to heighten the effect of the dramatic situation. The quietness of the aria's beginning, the outburst in the middle, and the subsequent repetition of the calm opening music serve to reflect the aristocratic countess's initial outward composure in the face of her husband's infidelity; her momentary conquest over pride, which enables her to address her anguish; and her gaining of the inner composure that enables her to act. The countess, then, immediately engages our interest because of the way Mozart contrives to use musical form for dramatic purposes. In Violetta's "Sempre libera" in *La Traviata*, Verdi employs the traditional cabaletta to the same end.

In *Tancredi*, on the other hand, the series of solo and concerted numbers on texts

## Format Key

- Ⓛ LP
- Ⓜ Cassette
- Ⓢ Compact Disc
- Ⓥ Videocassette
- Ⓦ Videodisc
- Ⓡ Open reel

### RECORDING INFORMATION

(A) analog original

(D) digital original

Large symbol beneath title indicates reviewed format. Small symbols following catalog number of reviewed format indicate other available formats (if any).

Catalog numbers of all formats of a particular recording usually are identical except for differing prefixes or suffixes. Catalog numbers of formats other than the reviewed format are printed only if their basic numbers differ substantially from that of the reviewed format.

Arabic numeral in parentheses indicates number of items in multi-item set. Unless otherwise indicated, all multi-LP sets are in manual sequence.

about hope, despair, anguish, courage, devotion, and the like does little more than provide vehicles for the deployment of impressive voices in varied displays of stylized, melodramatic expression. There is no characterization, no narrative development, and little cumulative or cohesive musical structure between numbers (even when they follow one another without pause). Even in the reflections of Armenaide in prison and of Tancredi as he goes into battle, Rossini's musical invention does not rise above the pretexts the situations offer for composing the formal airs and duets the public expected to hear. The object in *Tancredi*, it seems to me, was for the listener's attention to remain undiverted from the brilliance of the singing.

I say "it seems to me" because my friend Philip Gossett (the Robert W. Reneker Distinguished Service Professor of Music at the University of Chicago, member of the Editorial Board of the *Edizione critica delle opere di Gioachino Rossini*, and the writer of the notes for this album—to give him all the titles he owns up to whenever he writes taking umbrage at something I have said) finds the work more affecting than I do. More than that, he senses in the later operas, such as *La Donna del lago*, *Guillaume Tell*, and *Semiramide*, which I find musically and dramatically more involving, "a nostalgia for the classical art of *Tancredi*. . . [It] represents youth, sentiment, vitality; whatever his other achievements, Rossini could never again recapture quite so perfectly these elusive qualities."

But it must be remarked that Prof. Gossett also said of *La Donna del lago*, when he came to write the jacket notes for a recording of it, that in this, "perhaps Rossini's most tuneful opera," the composer "embraced all musical techniques known to him, pushed into dramatic and structural territory largely uncharted in Italian opera, explored the riches of the orchestra, redefined the nature

of the chorus, created, in short, a tradition to which later composers . . . could only look back in awe." And the same was true, he said, of all Rossini's Neapolitan operas. This hardly sounds like the work of a composer who felt nostalgia for the classical traditions of *Tancredi*.

At moments like these, Prof. Gossett, who knows more than almost anyone else about Rossini, writes as an advocate making a case for restoring his operas to the repertory. Anyone not similarly immersed in the project may find it hard to be carried along with his enthusiastic response to each one. On the other hand, listeners who cannot hear in *Tancredi* the "strong dramatic action" I do not believe Rossini set out to provide, may find instead, as I do, that its separate numbers, particularly those for Tancredi and for Armenaide in the second act, are impressive enough if they are simply taken for what they are: opportunities for beautiful singing. Rossini's orchestral introductions and interludes are engaging as well.

Given the sort of opportunities offered, Marilyn Horne's sensitivity, rhythm, intonation, and accuracy in ornamented passages suit her for the role of Tancredi. Without detracting from those qualities, one may note that the warm luster of her middle and upper notes contrasts with the hollow timbre of her low ones. Some may find the wobble in her upper register at high volumes, and in her lower register at all levels, disturbing in the slow numbers (though not in all: Her singing of "Ah! che scordar non so" in Act II is beautiful) and not always attractive in duet with Lella Cuberli, the Armenaide. Yet it is hard to imagine anyone today articulating the *fiorature* more brilliantly than she does, and those are an important feature of *Tancredi*.

*Fiorature*—the embellishment of a line of melody by rapid figuration, particularly to work a variation on a passage's repetition—had as their purpose the intensification of the emotional sense of the music. The agility of the singer was admired, but at its best it was admired for its use in expanding upon and dramatizing what had just been sung.

Because operas in the 18th and 19th centuries were written on commission from specific theaters and for specific casts, composers wrote embellishments that fell within those particular singers' capabilities. Often this was done at the rehearsals. When a successful opera was transferred to another theater, it was altered for the smaller or larger forces available. If the composer had a hand in the new production, he himself rewrote the arias and ensembles to suit the various singers (the melodic lines as well as the embellishments); he might rewrite the orchestra's parts, too, which even in Verdi's time were likely to have been scored initially only at the rehearsals for the premiere.

If the composer was not involved, the singers altered the notes to suit themselves; the more willful did so even at the premiere. And what the singers did for themselves was (CONTINUED ON PAGE 76)

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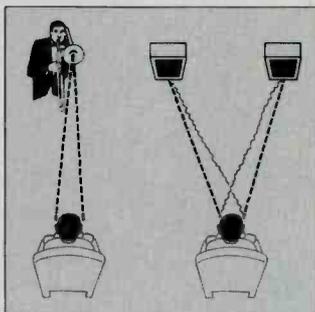
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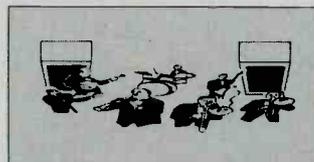
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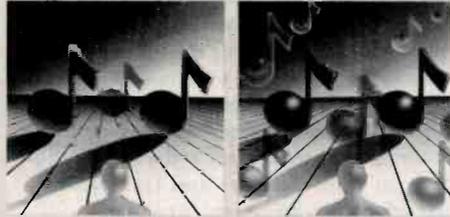
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(CONTINUED FROM PAGE 72) sometimes done only to indulge their vocal limitations and poor taste, as well as to satisfy that portion of the audience that would applaud any display, however grotesque, by a favorite artist. The recent discovery that in 18th- and 19th-century practice singers inserted embellishments of their own, not found in the printed parts, has brought with it the interpolation of anything and everything by singers with no understanding that *fioriture* were meant to be governed by dramatic purpose.

Rossini came to abhor the liberties singers took with his music (his complaints about this practice can be found in his letters). Early in his career, he broke with tradition and began to write out embellishments in his manuscripts without regard for specific singers, embellishments he could reasonably ask any competent artist to follow with little deviation. The *fioriture* in the new, revised score of *Tancredi* are less extensive than those Horne sings, but in his notes for this album, Prof. Gossett slithers away from revealing which he would have preferred. He merely observes, "Whether modern singers adopt Rossini's ornamentation or provide their own, they must use it for expressive ends. When properly applied, it adds an important and absolutely authentic dimension to Rossini's score." For a recording for one's library, Rossini's own notes would seem to have been the best choice. However, Horne's interpolations are less excessive than is usual with her, and I do not find that they encumber the music.

As Armenaide, Lella Cuberli sings with beauty of voice and cohesive musical phrasing in her first scene in Act I, but she sings less impressively later. (She is the Armenaide in a Fonit-Cetra studio recording, too, with Fiorenza Cossotto and the Cappella Coloniensis.) The voice of tenor Ernesto Palacio (Argirio, Armenaide's father) is attractive, except when he strains after the highest notes. His delivery does not have the lightness and ease Luigi Alva's singing had in *La Cenerentola* and *Il Barbiere di Siviglia*, which demonstrated that this was not only possible but probably what Rossini expected. The other principals are adequate. The orchestra, with the exception of the English horn in Armenaide's scene in prison, plays animatedly and well under the direction of Ralf Weikert.

The singers are accompanied here by a small ensemble of players, as they might have been in Rossini's time, although it is not an ensemble playing early instruments, as is the case on the Fonit-Cetra set. I cannot hear any disadvantage. Because the recording was assembled from live performances (and from a few rehearsals or make-up sessions, judging by those passages in which suddenly there is no sound of an audience), the soloists do not sing at a consistent distance from the microphones. Otherwise, the recorded sound is agreeable, if not as clean or spacious as it might have been from a stu-

dio recording. On my equipment, the voices and strings have a slight, unnatural, electronic gloss, removable by reducing the treble. Texts are provided. *Thomas Hathaway*

#### ALWYN:

**Rhapsody for Piano Quartet\*;** **String Trio;** **String Quartet No. 3.**

⊙ D. Willison\*; Quartet of London. Martin Compton, prod. Chandos ABRD 1153 (D).

THE BRITISH COMPOSER WILLIAM ALWYN DIED on September 11, 1985, just two months before his eightieth birthday. He accomplished much in his long career. Along with producing more than 60 film scores and a raft of works for orchestra and chamber ensemble, he was an influential radio commentator, a respected teacher at the Royal Academy of Music, a poet and translator of French poetry, an essayist, a painter.

What is presented here complements the recordings of song cycles, piano pieces, and other chamber works that Chandos has lately issued. The chronological range is broad, but one need not listen too carefully to hear in the lyrical and often tonal Third Quartet of 1984 the same communicative urgency, or feel the same warmth, as that which comes through so convincingly in the unashamedly romantic *Rhapsody* of 1938. Indeed, even during those years when he went the serial route, Alwyn never lost sight of his humanistic goals; for all its manipulations of the germinal twelve-note row, the 1962 String Trio similarly remains at every moment the work of an artist for whom heartfelt expression was the ultimate concern.

In terms of the performance by the Quartet of London, sonically, and in every other way, this is an extraordinarily beautiful product. *James Wierzbicki*

#### BERWALD:

**Symphonies: No. 1, in G minor ("Sérieuse"); No. 2, in D ("Capricieuse"); No. 3, in C ("Singulière"); No. 4, in E flat.**

⊙ Gothenburg Symphony Orchestra, Järvi. Deutsche Grammophon 415 502-2 (D, 2). ⊙ (2). ⊙ (2).

NEEME JÄRVI SURELY MUST BE ONE OF THE busiest conductors of the day, both in the concert hall and in the recording studio. With the Scottish National Orchestra, he has completed an integral recording of the Prokofiev symphonies and has started a Shostakovich symphony cycle. With the Gothenburg Symphony, he is busy recording all of Sibelius's orchestral music, as well as Nielsen's and Stenhammar's. He has also started to put on disc the ten symphonies by his Estonian countryman Eduard Tubin. As if that weren't enough, here is a complete set of the four symphonies of Franz Berwald.

These wonderful scores have been recorded several times, and one remembers a pioneering Deutsche Grammophon LP by Igor Markevitch and the Berlin Philharmonic Orchestra containing the *Singulière* and the Symphony in E flat, a similar coupling on Decca/London under Sixten Ehrling, a pair-

ing of the *Sérieuse* and the *Singulière* under Hans Schmidt-Isserstedt, and a lone *Capricieuse* on a small Swedish label. Then, in 1977, came an EMI album of four discs gathering practically everything Berwald wrote for orchestra: the four symphonies, the five symphonic poems, two overtures, and the concertos for piano and for violin. The performances, by the Royal Philharmonic Orchestra under the Danish conductor Ulf Björlin, were fairly good but did not reach the exceptional quality of the old Markevitch record. There obviously was room for something better, and this—as far as the symphonies (Berwald's masterpieces) are concerned—has arrived in the form of the present set of two Compact Discs, recorded in Gothenburg in May 1985, and its superlative technical quality.

Written within a short period of hardly four years, between 1841 and 1845, which makes them roughly contemporary with the symphonies of Schumann and Mendelssohn, Berwald's four essays stand quite apart from any other music of the period.

In sheer concision and formal balance, they are the works of a true classicist. They all last between 25 and 30 minutes, and their unique mixture of healthy vigor, fiery passion, exquisite humor, and gossamer, quicksilver lightness brings Haydn to mind—a Haydn, however, who would have known both Mendelssohn and Berlioz. There is nothing in them that recalls the sombre, brooding moods usually associated with the North; on the contrary, one finds a lean vitality, a straightforwardness, and a smiling extroversion that seem to foreshadow another great symphonist of the North: Carl Nielsen. Just compare the opening of Berwald's Symphony No. 4 to that of the Dane's Symphony No. 3 (*Sinfonia Espansiva*). Berwald's music was far too bold and original to gain appreciation during his lifetime, and in fact only the *Sérieuse* was played (once) before his death. No doubt had he received more encouragement, he might have written several more symphonies after 1845.

By common consent, Berwald's Third Symphony (*Singulière*) is the most remarkable of the lot, the most strikingly original: The very opening is music of unsurpassed magic, and the middle movement encompasses a scherzo within two slow sections in a way that Rachmaninoff, 90 years later, was to revive in his own Symphony No. 3. It is also the most frequently performed and recorded. The noble *Sérieuse*, sometimes looking forward to Bruckner, is perhaps a deeper utterance (its magnificent slow movement was played at Berwald's funeral), and the Symphony No. 4 is the lightest and most Haydnish of the bunch—a true comedy, like Beethoven's Eighth.

The *Capricieuse*, lastly, has come down to us in a sketchy form, the full score having been mysteriously removed from the composer's shelf a few days after his death, and it has always been considered the weakest of the four. Admittedly, it suffers from some

repetitiveness, but a performance as fine as the one under review raises it to a level almost equal to that of its companions.

In general, these are exceedingly beautiful performances, by and large the best ever recorded of these marvelous works. Listen to the somber vigor of the outer movements of the *Sérieuse* or to the bubbling sparkle of the last two movements of the E flat! One small idiosyncrasy should be mentioned: At the end of the *Singulière*, Järvi chooses to play the penultimate hymnic bars twice rather than once as indicated by the composer, and this is followed by a broadening of tempo in the very last bars. Järvi thinks Berwald's original ending to be too sudden and abrupt, but in my opinion, this is precisely what the composer wanted. The effect on most of the older recordings mentioned is quite shattering, more so than Järvi's attempted monumentalization. But don't let this very slight quirk deter you from getting an album that by any standard is one of the most successful of the year and the definite recommendation as far as Berwald's symphonies are concerned. *Harry Halbreich*

**BLISS:**

**String Quartets: No. 1, in B flat;**

**No. 2, in F minor.**

Delmé String Quartet. Edward Perry, prod. Hyperion A 66178 (A).

THESE PIECES DATE FROM 1941 AND 1950, respectively. They are not, in fact, the first

and second quartets to come from Arthur Bliss's prolific pen: They were preceded by at least two other essays in the medium (one from c. 1915 and the other from 1923-24), which were withdrawn even though their initial reception might have been regarded by a less self-critical artist as encouraging. When listening to the "mature" quartets recorded here, one can't help but wonder about the content of those works from Bliss's almost forgotten *enfant terrible* period. These are serious, meticulously crafted statements from a composer well on his way to being named Master of the Queen's Music (the appointment came in 1953), yet they seem rather stolid as well as aloof, lacking both the lyric freedom and rhythmic drive characteristic of, for example, the 1920 *Conversations* for flute, oboe, and string trio or the 1927 Quintet for oboe and strings. In any case, the performances by England's Delmé Quartet are as impassioned as the music allows them to be, and the sonics meet Hyperion's usual very high standards. *James Wierzbicki*

**DVOŘÁK:**

**Piano Trio, Op. 90, "Dumky."**

Francesco Trio. Wilson Audio W 8416 (D). (2 Sinaloa Ct., Novato, Calif. 94947.)

**DVOŘÁK:**

**Piano Trio, Op. 90, "Dumky."**

Suk Trio. Denon CD C37-7057 (D).

THESE TWO RELEASES TOGETHER HAVE conspired to break, if not a critic's preju-

dice, then definitely his inclinations. If asked to define my ideal rendering of Dvořák's autumnal Opus 90, one of the summits of the chamber repertory, I'd have described something very like what the Francesco Trio (violinist David Able, cellist Bonnie Hampton, and pianist Nathan Schwartz) offers here: a performance most often whispered, nocturnal. As the piano meditates on its repeated chords at the start of the second movement, the cello can barely find the strength to begin. That kind of hushed hesitancy is where this threesome most excels, in a performance that reminds us how much of the string writing is marked *con sordino*.

The version by the Suk Trio (led by the composer's great-grandson, Josef Suk, with cellist Josef Chuchro and pianist Jan Panenka) reminds us how often the strings are required to play full out. This is a performance of enormous energy, the Czech trio reveling in the contrasts between each *dumka's* fast and slow sections. I hadn't anticipated the benefits of such urgency, but they are startling. If the Francesco is more contemplative, the Suk has a special affinity for the work's frequent ride-the-wind vivaces. Its members play throughout with a frank and gorgeous freedom, a generous rubato made possible by their truly splendid technique: Suk's runs upward are just that much easier, his rhythms sharper, than those of his Francesco counterpart, and the pianist commands a wider range of effects than does his

# A BALANCHINE ALBUM

A *Balanchine Album* features four of George Balanchine's most enduring ballets: Tchaikovsky's *Serenade*, Hindemith's *The Four Temperaments*, Stravinsky's *Agon*, and *Emeralds* (with music from Fauré's *Pelleas and Shylock*), performed by the New York City Ballet Orchestra, Robert Irving, conductor. "Just as there is a Balanchine style in choreography and in dancing, there is a Balanchine—or Balanchine/Irving—style in the performance of music. Irving brings to the music years of watching the ballets being created, reshaped, rehearsed and performed... and so the score for him is not only a cluster of black notes on white paper, but the images of dancers dancing as well." (from the liner notes)

Nonesuch (79135)



photo credits: Henri Cartier-Bresson (left), Beth Bergman © 1986 (right)

# STRATAS SINGS WEILL

*Stratas Sings Weill* is Teresa Stratas' long-awaited follow-up to *The Unknown Kurt Weill*. Only the second solo recording in her career, it features fifteen of Weill's greatest American, French and German theatre songs in the composer's original orchestrations, with Gerard Schwarz conducting the Y Chamber Symphony.

Nonesuch (79131)

ON NONESUCH RECORDS, CASSETTES AND COMPACT DISCS



opposite number. The Suk account, in Denon's firm and focused sound, is enormously compelling. Hats off to the Francesco, and an even deeper bow to the Suk.

Thomas W. Russell III

**GERSHWIN:**

**Works for Piano (29).**

Pennario. Patti Laursen, prod. Angel EMI 4DS 37359 (D). © CDC 47359.

"Song-book": Swanee; The Man I Love; I'll Build a Stairway to Paradise; Do It Again; Fascinating Rhythm; Lady, Be Good; Nobody but You; Sweet and Low-down; 'S Wonderful; Clap Yo' Hands; Somebody Loves Me; Do, Do, Do; My One and Only; I Got Rhythm; That Certain Feeling.

Strike up the Band; Who Cares?; Liza. Porgy and Bess: Jasbo Brown Blues. Three Preludes: in B flat; in C sharp minor; in E flat minor. Promenade ("Shall We Dance"; "Walking the Dog" sequence). Two Waltzes in C. Merry Andrew. Primrose Ballet. Three-Quarter Blues. Rialto Ripples.

THE ONLY TROUBLE WITH GEORGE GERSHWIN'S elaborate song transcriptions as published in his *Song-book* is that they are tantalizingly brief: Too often, just as they grip one, they stop. The composer's private performances must have gone on at far greater length. Leonard Pennario's don't, but his steely-fingered virtuosity enables him to cope with the pieces' technical demands better than most who have tackled them on or off records. Nevertheless, I feel that the 1973 Nonesuch versions by William Bolcom, while certainly

exhibiting less bravura pianistically, capture more of the essential Gershwinian lilt and insouciance of these eternally haunting melodies.

Pennario does well with the more extroverted remainder of the program, perhaps particularly so with the rambunctious *Jasbo Brown Blues* and the early, raggy *Rialto Ripples*, written in collaboration with Will Donaldson. Throughout, the digital technology copes realistically with the severe demands of the soloist's somewhat hard-toned pianism.

R. D. Darrell

**HARRIS:**

**Choral Works.**

**HANSON:**

**Choral Works.**

**SOWERBY:**

**A Liturgy of Hope\*.**

Harbach\*; Roberts Wesleyan College Choral, Shewan. John M. Proffitt, prod. (A). (Music Dept., Roberts Wesleyan College, 2301 Westside Dr., Rochester, N.Y. 14624.)

Harris: Symphony for Voices; When Johnny Comes Marching Home; Three Songs of Democracy on Poems of Walt Whitman: To Thee, Old Cause; Year That Trembled; Freedom, Toleration.

Hanson: A Prayer of the Middle Ages; "How Excellent Thy Name"; "I Will Lift Up Mine Eyes"; "Praise Ye the Lord\*."

AT LAST, ROY HARRIS'S *SYMPHONY FOR VOICES* has been given a modern recording. Aply described by producer/annotator John

Proffitt as "a choral Mount Everest," Harris's setting of texts from Whitman's *Leaves of Grass* demands a near orchestral range of expression from its a cappella vocal forces. It is performed effortlessly by the Roberts Wesleyan College Chorale conducted by Robert Shewan. Two other Harris choral pieces, plus the Hanson and Sowerby offerings (most with organ accompaniment by Barbara Harbach), round out this most welcome disc.

Noah André Trudeau

**JANEQUIN:**

**Chansons (9).**

**SERMISY:**

**Chansons (8).**

Clément Janequin Ensemble. Harmonia Mundi HMC 901072 (A).

JANEQUIN: Voulez ouir les cris de Paris; Ung mari se voulant coucher; Du beau Tepin; Or vien ca, vien, m'amy; La guerre; La Meusniere de Vernon; L'Amour, la mort, et la vie; Martin menoit son porceau; Au joly jeu du pousse avant. SERMISY: Languir me fais sans t'avoir offensée; Je n'ay point plus d'affection; La, la, Maistre Pierre; Secourez moy, ma dame, par amours; Dont vient cela, be'lle, je vous supply; Jouyssance vous donneray; Au joly boy; Tu disoys que j'en mourroys.

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wonderful selection of four-part *chansons* by Clément Janequin and Claudin de Sermisy, both of whom flourished over 400 years ago, performed here by a superb French male quartet—France's answer, in a way, to The King's Singers. They make this marvellous, sometimes robustly bawdy music come as vibrantly alive as if they were singing new works with the ink still wet on the page.

Hail to all four and to Claude Debôves, who from time to time lends a hand on the lute. Generally speaking, the eight Sermisy selections tend toward the contemplative, the nine Janequin pieces toward the jolly, the lusty, the downright pornographic. The ensemble savors them all with impartial enthusiasm and artistry. A leaflet provides texts, but in archaic French only, which will probably drive you to a French-English dictionary—a *big one*—to find out what gets these four bucks so invigorated. Anything that this extraordinary group performs deserves particular attention. Hurrah!

Paul Moor

**MOZART:**

**Fantasia in C minor, K. 475; Sonatas for Piano: No. 1, in C, K. 279; No. 12, in C minor, K. 457; No. 17, in D, K. 576.**

☐ Uchida. Philips 412 617-4 (D). ☉☉

I'M ASHAMED TO CONFESS THAT THIS IS THE first recording I've heard of the Japanese pianist and Mozart specialist Mitsuko Uchida. I shan't miss any from now on, for few Mozart



MITSUKO UCHIDA: POWERFUL MOZARTIAN IMPRESSIONS

interpreters make so immediately powerful an impression. Uchida's greatest talent may well be her remarkable independence of finger control and powers of precise articulation and differentiation of line. But she has genuine gifts of graciousness and eloquence in addition to sheerly technical expertise. The sometimes somber drama of the famous C minor Fantasia/Sonata combination emerges more movingly here than in most recorded versions I've heard lately; hers surely ranks alongside the great ones by the

likes of Walter Gieseking and Lili Kraus. Uchida is convincing, too, in the more naively endearing Sonata No. 1 of 1775, as well as in the great last one of 1789.

If you have been as slow as I was in catching up with Uchida's Mozart sonata series (this is the fourth release to appear in this country), I can assure you that it will be well worth your while to make up for your tardiness as soon as you can. R. D. Darrell

**MOZART:**

**Sonatas for Piano: No. 8, in A minor, K. 310; No. 14, in C minor, K. 457.**

☐ Brendel. Philips 412 525-4 (D). ☉☉

**HAYDN:**

**Sonatas for Piano: No. 30, in B minor, Hob. XVI:32; No. 39, in E minor, Hob. XVI:34; No. 42, in D, Hob. XVI:42; Fantasia in C, Hob. XVII:4; Adagio in F, Hob. XVII:9.**

☐ Brendel. Philips 412 228-4 (D). ☉☉

ALFRED BRENDEL'S NEWLY RECORDED versions of Mozart's two great minor-key piano sonatas, K. 310 and K. 457, are likely to strike the unprepared listener as graceless, needlessly emphatic, and marred by awkward rhetorical gestures. Beneath this unattractive surface is a musical conception of great intelligence and strength: Brendel here is worlds away from the old-fashioned, superficially "pretty" Mozart of such old-school pianists as Walter Gieseking. But a casual comparison with, say, Dinu Lipatti's very beautiful recording of K. 310 (Odyssey

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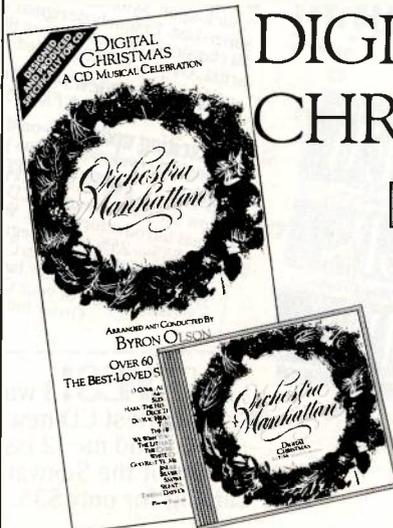
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ALFRED BRENDL: SOMETHING FOR FANS OF BRENDL OR HAYDN

CHRISTIAN STEINER

31 26 0320) reminds us that Mozart, even at his most demonic, is not middle-period Beethoven. Brendel's forceful approach to the minor-key Mozart is undeniably stimulating, but it goes too far.

The latest installment in Brendel's Haydn series for Philips, on the other hand, is straightforward and satisfactory. Although Brendel has played the B minor Sonata with greater wit and incisiveness in concert, these performances are better than anything else currently available on record and a worthy continuation to what looks to be the best Haydn sonata series (on a modern piano, anyway) that has appeared so far.

## Critics' Choice

The most noteworthy releases reviewed recently

### BACH:

**Sonatas and Partitas for Solo Violin, B.W.V. 1001-6.**

Mintz. Ⓞ Deutsche Grammophon 413 810-2, May.

### BERIO:

**Sinfonia; Eindrücke.**

The New Swingle Singers, Orchestre national de France, Boulez. Ⓞ RCA Erato ECD 88151, June.

### COPLAND:

**Billy the Kid; Rodeo.**

St. Louis Symphony Orchestra, Slatkin. Ⓞ Angel EMI 4DS 37357, July.

### HANDEL:

**Solomon.**

Watkinson, Argenta, Hendricks, Rodgers, Jones, Rolfe Johnson, Varcoe; Monteverdi Choir, English Baroque Soloists, Gardiner. Ⓞ Philips 412 612-4, June.

### HAYDN:

**Symphonies Nos. 94 and 96.**

Academy of Ancient Music, Hogwood. Ⓞ Oiseau-Lyre 414 330-4, June.

### MAHLER:

**Symphony No. 5.**

Philharmonia Orchestra, Sinopoli. Ⓞ Deutsche Grammophon 415 476-2, June.

### RAVEL:

**Songs (complete).**

Bacquier, Berganza, Van Dam, Lott, Mespilé, Norman, Baldwin; Orchestre du capitole de Toulouse, Ensemble de chambre de l'Orchestre de Paris, Plasson. Ⓞ Angel EMI DSCX 3965, July.

### SCHUMANN:

**Symphonies Nos. 1 and 4.**

Vienna Philharmonic Orchestra, Bernstein. Ⓞ Deutsche Grammophon 415 274-2, July.

### SCHUMANN:

**Symphony No. 3; Concerto for Piano and Orchestra, in A minor, Op. 54\*.**

Frantz\*; Vienna Philharmonic Orchestra, Bernstein. Ⓞ Deutsche Grammophon 415 358-2, July.

### TIPPETT:

**Sonatas for Piano, Nos. 1-4.**

Crossley. Ⓞ CRD 1130/31, June.

### RECITALS AND MISCELLANY

**THE RECORD OF SINGING, VOL. 3.**

Various vocalists, orchestras, and accompanists. Ⓞ Seraphim IM 6143, May.

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S H A

The Mozart album, in short, is for Brendel fans, the Haydn for Haydn fans.

Terry Teachout

**STILL:**

**Symphony No. 3 ("Sunday Symphony")\*; Instrumental and Choral Works.**

Umiker\*\*†, Tollefson\*\*†, Garrison†, Magill†; North Arkansas Symphony Orchestra, Woods\*. Schola Cantorum of the University of Arkansas, Grohff. North Arkansas Symphony Orchestra NASO 1001 (A). (P.O. Box 1724, Fayetteville, Ark. 72702.) ☎ (William Grant Still Music Society, 26892 Preciados Dr., Mission Viejo, Calif. 92691.)

Instrumental works: Romance for Saxophone and Piano\*\*, Folk Suite No. 4 for Flute, Clarinet, Cello, and Piano†. Choral works††: Three Rhythmic Spirituals (Lord, I Looked Down the Road; Hard Trials; Holy Spirit, Don't You Leave Me); I Feel Like My Time Ain't Long.

music, will have a particular appeal to two groups: those with a special interest in ancient music (in this case, 11th to 13th century) and those who have fallen under the spell of Carl Orff's boisterous, glorious work of the same name, which owes its existence as well as its title to the collection of manuscripts excerpted here. They first came to light in 1803 in Benediktbeuren, that baroque jewel of a monastery not far from Munich.

Pious, roistering, contemplative, ribald, these *carmina* originated mostly from the Go-liards: lapsed monks who roved Europe, "drinking, gaming, lazing, indulging in orgies and prostitution," according to Dr. Clemencic, who describes some of the amatory ditties as "definitely immoral."

These solo singers and instrumentalists perform the *carmina* with superb lustiness, and it annoys me that I can't tell you their names and the fascinating instruments they play with such virtuosity. In those respects and others, the accompanying booklet leaves much to be desired—in order to compare the English translation with the original (usually Latin) text, you have to flip about 17 pages back and forth, and four texts go completely untranslated—but I commend the music and performances to you as something very special indeed. This disc continues Harmonia Mundi's exceptional series, which should win many new friends for "old" music.

Paul Moor

HIGH FIDELITY ARCHIVES



DEAN OF AFRO-AMERICAN COMPOSERS, WILLIAM GRANT STILL

HERE'S A HOME-GROWN PRODUCT STRAIGHT from Arkansas that features loving accounts of music by William Grant Still. One side is devoted to Symphony No. 3 (*Sunday Symphony*), one of Still's facile, colorful, naive, yet attractive evocations of his warmly humanistic and pacifistic world view. The students, faculty, amateurs, and professionals that make up the North Arkansas Symphony obviously rehearsed a lot for this performance, which is polished enough to pass muster. Side 2 contains a mix of Still's chamber and choral works, providing a nicely balanced tribute to the "Dean of Afro-American Composers."

Noah André Trudeau

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# House of Horrors

Scary soundtracks reviewed by our cinema specialist

BY NOAH ANDRÉ TRUDEAU



"A NIGHTMARE ON ELM STREET, PART 2": SLASHDANCING TO THE BEAT OF CHRISTOPHER YOUNG'S SCORE

## GOLDSMITH:

### The Final Conflict.

Ⓞ National Philharmonic Orchestra, Newman. Varèse Sarabande STV 81272 (A). ☐ Ⓛ VCD 47242.

I CAN THINK OF NO SERIES OF SEQUELS IN THE annals of Hollywood that has enjoyed such a succession of utterly superb scores as has the *Omen* trilogy. Jerry Goldsmith wrote all three and won an Oscar (justifiably) for the first. All share some common thematic material and occupy much the same harmonic and coloristic world. Yet each is distinctive and each a decided achievement. This is powerfully evocative music, expertly written and wonderfully performed. You better believe that this is a treat.

## YOUNG:

### A Nightmare on Elm Street, Part 2.

Ⓞ Studio ensemble, Witt. Varèse Sarabande STV 81275 (A). ☐ Ⓛ VCD 47255 (Compact Disc also contains Part 1).

CHRISTOPHER YOUNG IS ONE OF A NEW BATCH of film composers working his way up through the slice 'n' dice school of cinema. He does not overreach himself here and manages a predictable but satisfying modern horror score. Using an ensemble consisting mainly of strings (with an emphasis on eerie slides instead of Herrmannesque shrieks), Young adds the requisite number of dissonant climaxes, ominous thuds, and weird sounds. No surprises here, and perhaps that's the nicest one. A treat.

## BERNSTEIN, E.:

### The Black Cauldron.

Ⓞ Utah Symphony Orchestra, Bernstein. George Korngold, prod. Varèse Sarabande STV 81253 (D). ☐ Ⓛ VCD 47241.

PURE MAGIC. VETERAN FILM SCORER ELMER Bernstein is back with a full symphonic soundtrack showing that this "old timer" has still got the right stuff. Propelled by a vitally American rhythmic sense, Bernstein enters the fantasy realm with nary a blink and deftly unfolds a score at times heroic, at times mock-heroic. Never a dull moment, even when the music is marking time. A special treat.

## HOLDRIDGE:

### Transylvania 6-5000.

Ⓞ Zagreb Symphony Orchestra, Holdridge. Varèse Sarabande STV 81267 (A).

IT IS DEVILISHLY HARD—SOME WOULD SAY fiendishly impossible—to write music that is funny. Lee Holdridge gives it his best shot in this symphonic concoction replete with quotes from horror classics and the inevitably twisted setting of the Glenn Miller standard. Suffice it to say, Holdridge's best shot is not enough. A trick.

## MANCINI:

### Lifeforce.

Ⓞ London Symphony Orchestra, Mancini. Varèse Sarabande STV 81249 (D). ☐

SOMEWHERE ALONG THE WAY, HENRY MANCINI got tagged as a film composer fit only for romantic comedies. This typecasting neatly ignored such fine dramatic scores as *Experiment in Terror*, *The Molly Maguires*, and now *Lifeforce*. Headed by one of the most engaging main titles in recent memory, Mancini's score expertly delves into the sound resources of the London Symphony Orchestra to create a *serious* soundtrack that amply repays repeated listening. A treat, a decided treat.

A CLOSING NOTE: LEST I UNDERSTATE THE technical achievement here, all these Varèse Sarabande pressings were quiet and first-rate, with recorded sound uniformly excellent. How this "little" label can consistently serve up quality sonic cuisine while the majors deliver Rice Krispies is perhaps the neatest trick of all. A deal with the audio devil, perhaps? ■

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# GLASS CUTTERS

Two critics examine the composer's song cycle on Compact Disc.

## GLASS:

### Songs from Liquid Days.

● Fowler, Pendarvis, Perry, the Roches, Ronstadt; Philip Glass Ensemble, Kronos String Quartet, Riesman. Kurt Munkacsi, prod. CBS MK 39564 (A). © □

## C L A S S I C A L

SONGS FROM LIQUID DAYS MARKS PHILIP GLASS'S first foray into songwriting. That in itself is surprising, for Glass's music, full of allusions to popular culture and easily packaged in small time frames, would seem tailor-made for songs. Here he has assembled an eminent group of lyricists—David Byrne, Paul Simon, Laurie Anderson, and Suzanne Vega—and an equally remarkable assortment of performers: Linda Ronstadt, the Roches, the Kronos String Quartet, Douglas Perry, Bernard Fowler, and Janice Pendarvis. The result should have been as different and startling as the talents of these artists.

Much of the blame must go to Glass for his insensitive setting of the texts. Lyrics are fragmented arbitrarily, violating the accentuation of the words and working against both dramatic content and musical phrasing. And since all the texts are set in virtually the same manner, the vocal lines do not distinguish between the widely varied subject matter. In *Einstein on the Beach* and *Satyagraha*, the linguistic distance and the non-narrative content negated most of these problems, but here the narrative settings are no less than embarrassing. Only in Byrne's stream-of-consciousness poetry does Glass's vocal line perfectly complement the lyrics.

Ironically, the music on this recording is unquestionably inspired and effectively linked to the meaning of the text. A rich overlay of strings, brass, winds, and keyboards is put to the service of Glass's familiar shifting arpeggios and repeated bass progressions; despite their familiarity, however, Glass's expressive range continues to expand. The minor-key chorale that opens "Changing Opinion," the leaping bass line of "Lightning," the portentous piano chords of "Open the Kingdom (Liquid Days, Part Two)," the introspective string quartet in "Freezing" and "Forgetting"—all indicate an emotional diversity within the cyclic unity.

Fowler, Pendarvis, and Ronstadt seem to struggle against the unnatural phrasing of Glass's vocal lines. Only Perry (Gandhi of *Satyagraha*) and the Roches are entirely successful, partly because they sing Byrne's lyrics. Perry sustains the phrases and communicates the drama of "Open the Kingdom"; the Roches contribute the ethereal and witty vocal harmonies of "Liquid Days (Part One)." In these non-narrative settings, Glass and his performers achieve that symbiotic relationship between text and music that elsewhere in the cycle proves so elusive.

K. Robert Schwarz

## P O P U L A R

BEFITTING A SERIOUS MODERN COMPOSER whose dramatic simplicity makes him most attractive to the pop audience, Philip Glass has chosen for his album of songs pop collaborators who have a conventional com-

mand of craft agreeable to a classical audience. While there's no reason to expect Glass to come up with a commercial album, *Songs from Liquid Days* is stiffer and more awkward than it needed to be.

David Byrne, Laurie Anderson, Paul Simon, and Suzanne Vega have contributed some of their most ghostly, elliptical lyrics, which seem especially suited to the repetitive dreamscapes of Glass's arrangements. But his melodies, which are more rounded, even tuneful, than those of his earlier work (like *North Star*), often overshoot the words, forcing Bernard Fowler to boast on Simon's "Changing Opinion." The song is about the quiet fears of a man listening to a hum in his house, but the gratuitously grand peaks of the trilling synthesizers and voice get none of that across. On most of the numbers, the singers don't pull against the settings; rather, they're swept up by Glass's thickly layered pulses and huge keyboard washes. Furthermore, a dusty aesthetic of what constitutes "classy" singing permeates most of the performances. The Roches' choirgirl chirping misses all of the humor of Byrne's lyrics for "Liquid Days (Part One)," and the operatic Douglas Perry bellows lines in Byrne's "Open the Kingdom (Liquid Days, Part Two)" that should have been tossed off as asides. Only Linda Ronstadt brings a tempered grace to her performances, Vega's "Freezing" and Anderson's "Forgetting."

All of the lyricists here are singers in the pop world, and one wonders how their more impressionistic vocals might have worked in Glass's settings. Perhaps the fractures and meanderings of these less perfect voices would have cut deeper. By splitting up the roles of lyricist and singer, Glass has removed the exploitation of persona that lies at the center of a pop auteur's performance and replaced it with the less interesting problem of the credible interpretation of a text. Underlying the approach is the shaky premise that, say, Byrne's lyrics are (of all things) poetry, when in fact it's only in his wild-eyed performances that the fragmented phrases take on meaning.

On CD, Glass's settings seem less predetermined and flat, primarily because of the shocking prominence of the synthesized bass compared with its sound on LP. The vocals are also more intimate in tone, especially Ronstadt's tender high notes. At such moments, *Songs from Liquid Days* has an earthbound grandeur that makes you hear its songs as hymns for the godless. Maybe on his next collaboration—and this is a laudable idea worth getting right—Glass will give us something more substantial to believe in than mere perfection. Mark Moses



RICHARD E. AARON/THUNDER THUMBES

RONSTADT (SECOND FROM RIGHT) AND THE ROCHEs: NO STRANGERS TO THE DISCIPLINES OF CLASSICAL VOCAL TECHNIQUE

# BACKBEAT

*Abdullah Ibrahim and Sathima Bea Benjamin:  
pianist and singer, husband and wife, exiles from apartheid*

**E**VERY INDIVIDUAL IN SOUTH AFRICA is traumatized by apartheid—the oppressors perhaps more so than the victims,” said Abdullah Ibrahim, the South African pianist and composer formerly known as Dollar Brand. “At least we have hope for the just society to come: a South Africa that belongs to all of its peoples regardless of origin. The oppressors’ only hope is to forestall the inevitable. The only wisdom they can teach their children is to always carry a gun.”

I visited Ibrahim and his wife, singer

Sathima Bea Benjamin, on June 12, the morning that South African President P. W. Botha declared a nationwide state of emergency in anticipation of the tenth anniversary of the Soweto uprising. Kneeling in front of a video monitor in his living room in New York’s Chelsea Hotel, Ibrahim tried without success to tune in C-SPAN for its live coverage of Botha’s address to the South African Parliament. “The police have rounded up all the opposition leaders,” he told me in a melting-pot patois that is British in its cadences but African in its lilt. “What is the

## OUTSIDE SOUTH AFRICA, GLARING IN

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BY FRANCIS DAVIS

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logic of that—to remove from circulation the only people who can say to the masses, ‘Hold back’? The confrontation is near. It is just a matter of time.”

Born in Cape Town in 1934, Ibrahim spent most of his adult life in voluntary exile in Europe and the United States. He is a cultural eclectic—no different from most global wanderers in that respect, though his being born a member of a colonialized people undoubtedly gave him a running start. (Moreover, his mixed racial heritage, which classifies him as “colored” rather than black by South African law, put him in an assimilationist position remarkably similar to that of the New Orleans Creoles and mulattoes, who played a seminal role in the gestation of jazz.) But like most political exiles, Ibrahim is also a displaced cultural nationalist whose longings for home filter his perceptions of new surroundings. The South African sound he once eloquently described as being a synthesis of “the carnival music heard every year in Cape Town, the traditional ‘colored’ music, the Malayan strains, and the rural lament” remains the thread that keeps his music from seeming crazy quilt despite its patchwork of cross-cultural borrowings, which include West African ceremonial and popular rhythms, Moslem incantation, British military-brass-band concord, gospel sanctimony and minstrel sanguinity, French impressionist and modal reverie, Monkian dissonance, and Ellingtonian Cotton Club panache. A mesmerizing pianist whose rhythms come splashing across the keyboard in thunderous ostinato waves, Ibrahim is truly “beyond category,” to borrow a pet phrase from Duke Ellington, one of his earliest admirers and the producer of his first American LP.

Over the last 20 years, Ibrahim’s solo piano recitals have evolved into lengthy continuous medleys of his own attractive themes and those of favored composers like Ellington, Thelonious Monk, Billy Strayhorn, and Eubie Blake. (This aspect of Ibrahim’s work is most faithfully documented on *Autobiography*, a two-LP set recorded live in Switzerland.) But although sturdy and intricate in themselves, Ibrahim’s solos are the blueprints for larger designs: As with Ellington, one can hear the colors of an orchestra bleeding together or separating in the voicing of each chord.

Ekaya, the fluid septet that Ibrahim formed in 1983 and that graces his two most recent albums (1984’s *Ekaya (Home)* and the new *Water from an Ancient Well*), represents a compromise between the huge ensemble he desires and the compact unit that economics dictates. “The ideal situation would be to have on stage as many people as possible,” he says. “Not just more instrumentalists, but singers, painters, sculptors, poets, nutritionists, physicians, and martial artists, to show that music can provide a conductive atmosphere for all other daily activities, the way it does in more traditional societies.”

Despite his harmonic sophistication,



SCOTT STERNBACH

BENJAMIN: “SOUTH AFRICA WILL ALWAYS EXERT A PULL.”

Ibrahim’s approach to improvisation is more straightforward than that of most of his American and European contemporaries. “Improvisation is not standing up there playing 20 choruses,” he once told jazz critic Don Palmer. “It is using what’s at hand.” With Ekaya, he finally has sidemen perceptive enough to shun chordal rhetoric and crest on his rhythms. Perhaps the truest proof of his genius as a bandleader is his ability to coax trim, inspired improvisations from trombonist Dick Griffin and baritone saxophonist Charles Davis, two usually prolix journeymen. Tenor saxophonist Ricky Ford and Panamanian altoist and flutist Carlos Ward, who complete Ekaya’s front line, are to Ibrahim as Paul Gonsalves and Johnny Hodges were to Ellington: It is impossible to imagine a composer finding two more simpatico interpreters. Ibrahim likens his rapport with Ward, in particular, to the empathy he once enjoyed with the late Kippy Moekeisi, “the Charlie Parker of South Africa,” in Ibrahim’s estimation, and the father figure in the Jazz Epistles, the Cape Town combo that begat Ibrahim and trumpeter Hugh Masekela in the late ‘50s.

“Kippy was the first to insist that we recognize the wealth of musical influences available to us as South Africans and not look exclusively to America for inspiration. He was a pillar of strength against those who would have us believe that we were inherently inferior.”

Ibrahim describes the seaport of Cape Town as “a cosmopolitan mixture of Xhosa, Zulu, British, Dutch, Khoisan, and Malayan traditions. As musicians there, we heard everything and we played everything. There was even a Cape Town Symphony Orchestra and an opera company. My early piano teachers were well versed in the European classical tradition.

“American merchant vessels would dock in our harbors, and we would run to meet these ships, because the Afro-American sailors on board would have American jazz records to sell to us. It was from these sailors

that I got the nickname ‘Dollar’ Brand; my name was really Adolf. My grandmother was a founding member of the first African Methodist Episcopal church in South Africa, and my mother was the church pianist, so I was also exposed to the black American tradition through the so-called Negro spirituals I sang in the choir. I was familiar with Islamic customs long before embracing Allah, because the Christian and Moslem communities were very close in Cape Town, as a result of so much intermarriage. The Moslems would know when we were celebrating Christmas or Easter, and we would know when they were fasting for Ramadan. Many families observed all the religious holidays across the board.”

SATHIMA BEA BENJAMIN ALSO WAS BORN IN Cape Town, in 1936. She remembers it as a “beau-teous place, with mountains, sea, perfect climate, exotic birds, and gorgeous sunrises and sunsets. There seemed to be music in the air, always.”

Benjamin and her husband requested to be interviewed separately. “I am Sathima and he is Abdullah, and although we love each other very much, we have separate careers,” she explained.

“I don’t perform as often as I would like, because I cannot. I have three roles, the most important of which is running the house and looking after our children [son Tsawke, fifteen, and daughter Tsidi, ten]. Second, there is my music, and third, the record company [both she and Ibrahim now record for Ekapa, the small label she runs out of their living room]. I guess I actually have four jobs, because Abdullah and I act as our own agents.

“I was raised to be a dutiful sort of person. My parents were separated by the time I was five, and I was raised by my [paternal] grandmother, who was very strict, very proper, very British in her ways, though she was quite African-looking. I was a lonely child, and along with daydreaming, which I indulged in constantly, music was my solace. I listened to American singers on the radio: Ella Fitzgerald, Nat ‘King’ Cole, Joni James, Doris Day. When I joined the choir in high school, I noticed that the director never assigned me solo parts, even though I had a very strong voice. ‘You sweep,’ he explained. ‘You slide up and down the note instead of staying directly on it.’ That meant nothing to me at the time, but in retrospect it shows that I was unconsciously trying to phrase like the black American singers I heard on the radio.

“After completing college, I taught school. But on the weekends, I sang in the nightclubs in the white areas, where black and so-called colored musicians were allowed to perform but were not allowed to mix with the audiences. We had to sit in the kitchen during intermissions, just as black musicians were having to do in the American South. There wasn’t such a strong ban on U.S. literature then, so I was able to read a

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lot about black Americans, and I felt a bond with them, with their yearning to be free."

Lighter in complexion than her husband, she too was classified as colored. "Sometimes people ask me, 'Oh, Sathima, why do you call yourself black?' Black is not a color, it's an experience. And in South Africa, there are only two possible experiences. I was never privileged to know what the white one was. That makes me black."

She and Ibrahim first left South Africa to live in Zurich in 1962, and it was there that they encountered Ellington, "the first American either of us had ever met—and thank God it was him. To this day, I still marvel at how truly *grand* he was." In addition to producing *Duke Ellington Presents the Dollar Brand Trio*, the maestro also supervised Benjamin's never-released debut. "Duke and Billy Strayhorn took turns at the piano. I remember Duke standing in the control room at one point and saying to Strayhorn, 'Can I hear some birdies?'—meaning could he play something sweeter than the wild things he was playing behind me. And Strayhorn answered, 'I am playing birdies: condors.'"

Benjamin is contemplating an album of Strayhorn compositions as a companion piece to her 1979 Ellington homage. About ten years ago, relatively late in her career, she began to write her own material as well. "At first, I was hesitant even to show my songs to instrumentalists, because I know I'm not a schooled composer like Abdullah. But the musicians I work with encourage me." She still "sweeps": There is a catch in her voice that would be easy to mistake for a coquettish affectation, if not for the sob it holds in check.

DESPITE LIVING IN THE CHELSEA HOTEL FOR almost a decade, Benjamin took the oath of U.S. citizenship only last year. "For most of those at the swearing-in ceremony, it was a joyous occasion. And it was for me, too, but I went through a period of soul-searching that I can hardly begin to describe, because South Africa will always exert a pull."

"I am still a citizen of South Africa," proclaims Ibrahim, who nonetheless will apply for U.S. citizenship later this year. "I always will be. Sathima and I are now in strategic retreat, but we expect to return."

"For years, we were free to leave South Africa and return as we pleased, so long as we did not make overt political statements. Soweto changed all that. The struggle had reached another level, and it was important for us as artists to play a more visible role."

For Ibrahim and Benjamin, the home of their childhood no longer exists—at least not as they remember it. "Perhaps the most notorious of all the government removals in the urban areas was the destruction of District Six, home of 30,000 people classified as 'colored' in the heart of Cape Town," writes Francis Wilson in the preface to the recently published *The Cordoned Heart*, a collection of photographs from South Africa. "District Six was a diverse society established over a

## Selected Discographies

### ABDULLAH IBRAHIM

#### Duke Ellington Presents the Dollar Brand Trio.

Reprise RS 6111; 1963. (Out of print.)

#### Ode to Duke Ellington.

Inner City IC 6049; 1979. (Recorded in 1973.)

#### African Marketplace.

Elektra 6E 252; 1980. (Out of print.)

#### Autobiography.

Plainisphere PL 1267-6/7 (2); 1983. (Recorded in 1978. Available only as import.)

#### Zimbabwe.

Enja 4056; 1983. □ 3112-12. (Distributed by Muse.)

#### Live at Sweet Basil, Vol. 1.

Blackhawk Ekapa Series BKH 50204-1; 1984. (525 Brannan St., Penthouse, San Francisco, Calif. 94107.)

#### Ekaya (Home).

Blackhawk Ekapa Series BKH 50205-1; 1984.

#### Water from an Ancient Well.

Blackhawk Ekapa Series BKH 50207-1; 1986. □

### SATHIMA BEA BENJAMIN

#### Sathima Sings Ellington.

Blackhawk Ekapa Series BKH 50201-1; 1979.

#### Dedications.

Blackhawk Ekapa Series BKH 50202-1; 1982.

#### Memories and Dreams.

Blackhawk Ekapa Series BKH 50203-1; 1983.

#### Windsong.

Blackhawk BKH 50206-1; 1986.

period of 200 years. . . . At one time or another, it had been home to musicians like Abdullah Ibrahim, writers like Richard Reve, political leaders like Cissie Gool. . . . In 1966, the district was proclaimed white. The order setting in motion the removal of the citizens there and the destruction of their homes was signed by the then Minister of the Department of Community Development, P. W. Botha. . . . Virtually every building was broken up by bulldozers. Hundreds of strong brick houses, some of them over a century old, were reduced to rubble. The vibrant world of District Six became an empty wasteland. It was as if there had been a war."

"Allah says, 'Fight injustice wherever you find it, or you will become one of the unjust,'" Ibrahim responds. "I am homesick for South Africa, but not for the home that is there. Allah says, 'I do not burden a soul with more than it can bear. Those who leave their homes for my sake, I will provide for them a better home.'"

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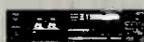
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REVIEWS



THE LEADERS OF FOUR SOVIET PACKS (FROM LEFT): STRANGE GAMES' VITIA SOLOGUB, AQUARIUM'S BORIS GREBENSCHIKOV, KINO'S VICTOR TSOI, ALISA'S KOSTYA KINCHEV

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### VARIOUS ARTISTS:

**Red Wave: 4 Underground Bands from the U.S.S.R.**

Joanna Stingray, prod. Big Time 6008-1 (2).  
 (Distributed by RCA.)

OSTENSIBLY OFFERED AS PROOF THAT ALL around the world, rock 'n' roll will never die, etc., this double album proves instead that it's still waiting to be born in most places. I am no cold warrior, nor am I an Old Lefty paranoid enough to suggest that this is part of a CIA plot to discredit Soviet youth. But boy, is this music bad.

The four Leningrad bands on *Red Wave* were secretly recorded, and their tapes smuggled out of Russia, by twenty-five-year-old Los Angeleno Joanna Stingray. Not surprisingly, the chief influence seems to be the spacey, quasipsychedelic extended jams of the late Sixties and early Seventies, when rock was indeed exploding into an inescapable international force and also being confused with Art. This is urban music full of urban imagery but with few specific references to Soviet life per se, though there are

oblique allusions, especially from Alisa. (The bands sing in Russian, by the way, but translations are provided.) However noble the intentions of these groups, their work is limpid and utterly forgettable; like rock's harshest critics, ironically, they fix on the simple surface novelty of the music without really getting to its heart and soul, and all are crippled by lack of a decent drummer. They are said to represent four distinct strains of "underground" or "nonofficial" Soviet music, but you coulda fooled me. Let's try to look at each band individually:

- Aquarium is led by Boris Grebenschikov, the first Soviet rocker to write and record his own songs in his native tongue. The music is fairly hard folk-rock, with guitar snaking through the rhythm section before settling on top of it via feedback and sound effects. There also are little baroque touches from keyboardist Sergey Kuryokhin.

- Kino claims reggae influences, but I swear the band sounds pretty much the same as Aquarium, with more emphasis on slurred, druggy ballads. Otherwise, Kino uses identical song structures and arranging techniques, albeit with more percussion.

(CONTINUED ON PAGE 91)

## JAZZ

### IGOR BRIL:

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### ALEXEI KUZNETSOV:

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JAZZ, WHETHER SANCTIONED OR NOT, HAS existed in Russia since the time of the Romanovs. If we are to believe published reports, Rasputin was poisoned to the accompaniment of American popular music, Shostakovich played ragtime piano in silent-movie theaters, and the cakewalk was the rage in St. Petersburg as early as 1910. Since then, Soviet musicians have eagerly followed all subsequent developments in American music; unfortunately, whatever we know of Soviet jazz has generally been the result of hearing expatriate musicians play with American groups. So it is with great pleasure that I greet these LPs by pianist Igor Bril and guitarist Alexei Kuznetsov, both of whom record in Russia for the state label, Melodiya.

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(CONTINUED FROM PAGE 90)

• Geez, now I swear Alisa sounds so much like the two previous bands that I forget I've put the second album on. So why is this music described as "Soviet boogie"? Actually, the members of Alisa do include a slightly tough drummer and a sort of punky lead singer. They also have a little more feel for primal rock, though "Bad Boy," their attempted anthem, is awfully quaint.

• Strange Games is ska-influenced and, to my ears, the most interesting of the batch. Drummer Alexander Kondraskin plays with some finesse, if little power. There's catchy sax riffing on "Chorovod Song," and "No Telephone" has a loose feel that none of the other bands can master. Singer/bassist Vitya Sologub's lyrics, which apparently are French poetry translated into Russian, often create tangible ambience early on, even if they do tend to deteriorate halfway through.

I wish all these bands well, of course, but ultimately there's one reason, and one reason only, why their work has been released in this country, and it has little to do with music. Ah, Hollywood; ah, show biz. Thy name is still gimmicky and exploitation.

John Morthland

**JEFFREY OSBORNE:**

**Emotional.**

Ⓞ Various prods. A&M SP 5103. ⓂⓄ

IN THE MIDDLE OF JEFFREY OSBORNE'S SHOW at Radio City Music Hall during his previous

tour, his road band broke into the opening bars of "When Doves Cry." The audience cracked up. Then, standing mock-amazed, Osborne muttered, "Oh, yeah, Prince. We all know Prince, right?" We certainly do. He's the megastar whose shoes Osborne would like to fill. But Osborne lacks at least two of His Royal Badness's important attributes: slick moves and a made-up video look. I want him to become a superstar nonetheless. Anyone who can provide nine tracks of musical enjoyment on one LP (*Jeffrey Osborne*) and then follow up with two more vinyl victories (*Stay with Me Tonight* and *Don't Stop*) certainly deserves to be one.

A pint-sized Albany, New York, native with a creamy firm tenor, Osborne began as a drummer with the '70s band L.T.D. After the other members discovered he could sing, he poured his heart out on such classics as "Love Ballad," which still brings tears to the eyes of many grown women, and "(Every Time I Turn Around) Back in Love Again," a tough bit of footstompin' music. Osborne went solo in 1982, hooking up with keyboardist George Duke, the poor man's Quincy Jones. Duke's production was perfect: It did everything to spotlight the voice and not the producer's own ego.

Feeling the pressure of one who wants to win new fans while cementing old ones with Crazy Glue, Osborne added a funk-rock sparkle to his next two Duke-produced albums. The ballads remained gorgeous, as

Osborne transformed what could've been sentimental tripe into honest passion. Still, despite going platinum, those LPs weren't enough to put him over. If it's still about songs, *Emotional* must. And it is! The summer smash "You Should Be Mine (The Woo Woo Song)" has become Osborne's biggest hit. Produced by Richard Perry, who directs alongside Michael Masser, Duke, and "Oz" himself, this tune about female pursuit and conquest is a terse essay in contemporary songcraft, a lilting groove that turns stompy in the chorus.

*Emotional's* electro-smooth tracks snap, crackle, and say "pop," too, but they're not honey-dripped crossover attempts. In fact, the vocal performances are unashamedly soulful: Osborne reaches into his gut for the muscle to blast his voice skyward. And listen to "We Belong to Love": You'll visualize a black gospel choir swaying reverently as you sing along.

Surprisingly, the speed-freak number also fits Osborne. Overseen by the singer himself (not Perry, as one might expect), "Love's Not Ready" bops and jives like a dude pretending to lose his cool, and it's going on my next party tape. Right next to it will be "Soweto," an antiapartheid chunker in the first person. Over circular bass and vigorous, chop-chop drums, children's voices beg, "Freedom, freedom, all we want is freedom." The message is straightforward: Show support for "your brothers in

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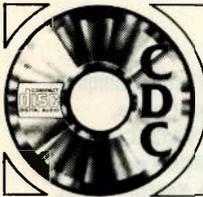
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(CONTINUED FROM PAGE 92)

and drummer Ben Riley, she sings the story of her birth (when her mother was just sixteen), her upbringing in a Pennsylvania mining town and Detroit, and her early experiences with the music that she says saved her. It's a good-humored performance. The title track, written by Jordan and backed exquisitely by Swartz alone, is more intense, despite its gospelly melody. The masterpiece here may be the inward-looking "It Never Entered My Mind," but I wouldn't want to be without her scatting on "Little Willie Leaps" or her portentous intoning of the first chorus of "The Inchworm."

At ease with the repertoire of both Danny Kaye and Charlie Parker, Jordan has a radiant sincerity that makes us believe her when she sings, "It's the music that sets me free." Coming from another singer, the line would sound like a cliché. *Michael Ullman*

## Format Key

- Ⓛ LP/EP
- Ⓜ Cassette
- Ⓢ Compact Disc
- Ⓥ Videocassette
- Ⓦ Videodisc
- Ⓛ 12-inch single
- Ⓢ Open reel

Large symbol beneath title indicates reviewed format. Small symbols following catalog number of reviewed format indicate other available formats (if any).

Catalog numbers of all formats of a particular recording usually are identical except for differing prefixes or suffixes. Catalog numbers of formats other than the reviewed format are printed only if their basic numbers differ substantially from that of the reviewed format.

Arabic numeral in parentheses indicates number of items in multi-item set.

# Teddy Wilson, 1912 - 1986

IF PIANIST TEDDY WILSON HAD NEVER played with Benny Goodman or Billie Holiday, he'd still be remembered as one of the Swing Era's most formidable musicians, but his association with the classic bandleader and the innovative singer granted him musical immortality. Wilson, who died on July 31 at the age of seventy-three, refined an understated, fluid style that brought a new sophistication to jazz piano. Throughout the Thirties and early Forties, he fronted sparkling small groups in the studio, established himself as a brilliant sideman and accompanist, and even led a highly touted big band—personal triumphs that are inevitably overshadowed by his simpatico work with Goodman's trio and quartet and on Holiday's early recordings. Wilson also made extramusical history with Goodman as the first black to break into the world of the white big bands.

Classically trained when he was a child—an influence that left its mark in his formally precise solos—Wilson changed directions as a teenager, and by twenty-one he had already toured with Louis Armstrong and made attention-getting recordings with Benny Carter. Two years later, in 1935, he was hired by Goodman, an audacious move by the bandleader, considering his commercial breakthrough had taken place only a few months earlier. Wilson was featured in a popular trio alongside Goodman and drummer Gene Krupa, later expanded to a quartet with the addition of vibist Lio-

nel Hampton. Wilson's blend of easy-flowing swing, graceful musical design, and faultless technique quickly elevated him to the same league occupied by Earl Hines and Art Tatum, the premier pianists of the day.

During his stint with Goodman, Wilson gathered other star soloists from the top big bands—Lester Young, Buck Clayton, Roy Eldridge, and Chu Berry among them—to make a series of excellent small-group recordings. It's here that Holiday, then a virtual unknown, enters the picture. Wilson's sessions often dispensed with strict arrangements, striking the perfect balance between structure and improvisation, which allowed Holiday freedom to experiment. These recordings are generally considered to be her greatest. In 1939, Wilson formed his own short-lived big band that highlighted his talents as an arranger.

From the Forties until shortly before his death, when illness forced him to stop performing, Wilson was a model of consistency, delivering pithy solos and ever exact accompaniment. He wasn't a heated player; you listened to him for his sensitive touch and constant tunefulness. His measured pianistics helped usher in a reflective intelligence to jazz; the leap from his groundbreaking work in the Thirties to Bill Evans doesn't seem that far. With the death of Teddy Wilson, the music has lost one of its greatest soloists and probably its finest team player.

*Steve Futterman*

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(CONTINUED FROM PAGE 48) ance excellent (if slightly bright and "forward"), with eminently smooth, uncolored sound throughout. Moreover, the imaging was exceptional: not particularly broad in its "stage," but unequivocal in any program material we threw at it. Both to give the image *Lebensraum* and to keep the bass in excellent balance, we'd suggest you experiment with the speakers away from the wall instead of accepting what evidently is intended as advice for any Acoustic Research floor model, rather than for the Connoisseur 40 specifically.

Impedance is unusually flat, never exceeding 10.8 ohms (at bass resonance, near 50 Hz) nor falling below 3.7 ohms (at the next minimum above bass resonance, near 100 Hz). The curve essentially confirms Acoustic Research's rating of 6 ohms nominal and 4 ohms minimum. Actual average across the entire audio band is 6.5 ohms; within the so-called music band, it averages 7 ohms. The speaker should present no problem to any competent amp.

The speaker had no trouble with the high-level test pulse, even at the test amplifi-

er's full output—in this case, equivalent to peak power of 26.8 dBW, or about 475 watts, into an 8-ohm load. Calculated sound pressure level (SPL) with that drive was 115.8 dB. On steady tones, distortion measurements were satisfactory, averaging about 1/2 percent across most of the band for a drive level of 85 dB SPL and increasing to about 1 percent for 100 dB SPL. Sensitivity was about what you might expect for an acoustic-suspension system of this size; AR's suggestion that the speaker be powered by an amplifier capable of putting out something between 15 and 150 watts (11.75 and 21.75 dBW) per side seems eminently sane, though good amps are hard to find today at the bottom of that range.

The Connoisseur 40 is exceptional enough, in our judgment, to deserve a good amplifier. Over and over during testing, we were struck by the freshness of the sound from our favorite recordings and the convincing nature of the stereo image. And the sound (if not the image itself) can achieve massive dimensions when driven by an appropriate amp with really clean program material. We are very impressed. ■

## MANUFACTURERS' COMMENTS

*High Fidelity routinely submits copies of test reports (after publication) to the manufacturers for review and comment. And from time to time, we get a response. For the past couple of years, we have been running manufacturers' comments as letters to the editor. In this issue, we are reviving our traditional format for presenting these replies.*

we have been able to identify the problem as program-related and not a limitation of the HTS-5000 itself. Our measurements have indicated that in the many duplication steps between a motion-picture audio master tape and a consumer videodisc or videocassette, imbalances between the left and right channels often arise from amplitude and phase errors. Often these imbalances are a function of signal amplitude, occurring only at low or high levels. Because dialogue usually is mixed or panned to be in the center of the screen, it is originally recorded with the same amplitude and phase on both program channels. Small mismatches that arise later in the duplication process appear in varying degrees as difference information and are consequently properly decoded as part of the surround channel.

### SHURE HTS-5000 SURROUND-SOUND DECODER (SEPTEMBER 1986)

WE WOULD LIKE TO COMMENT ON TWO questions raised in your review of the HTS-5000. The first concerns the decoder's output impedance. Although it is high compared with that of other consumer electronics products, we do not feel this is a practical limitation. With typical connecting cables having a capacitance of about 33 picofarads per foot (like those supplied with the product), the high-frequency response of any particular output channel will be less than 0.5 dB down at 20 kHz for cable lengths of as much as 12 feet. For a more typical 6-foot run, the response will be down less than 0.2 dB at 20 kHz.

The second item is the sibilant spitting you sometimes heard from the surround channel during your listening tests. We also have heard such effects, but on all occasions

If you are in doubt about the quality of a specific program, you can use an oscilloscope to display the left and right audio channels as a Lissajous pattern. The dialogue portions of the program should be in phase at all signal levels, appearing on the screen as a narrow diagonal line. Examples of videodiscs that are particularly free of such problems include *Back to the Future*, *Gremlins*, *Ladyhawke*, and *Return of the Jedi*.

**Robert B. Schulein**  
Chief Development Engineer  
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