REPLACING "THE GOLDEN EAR"

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

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MIKES, BATON, NO ACTION?
WHY AMERICAN ORCHESTRAS AREN'T RECORDING
Matthew Polk's Awesome Sounding SDA-SRS & SDA-SRS 2

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.
Now 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!"

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 SRS 2 is remarkably similar to that of the SRS. Words alone cannot express the experience of listening to these ultimate loudspeaker systems. You simply must hear them for yourself.

"Literally a new dimension in sound"

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, lifelike 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" trilaminate 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 6-½" 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 monocoque 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 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.

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

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

"Spectacular... it is quite an experience"

"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.

Where to buy Polk Speakers? For your nearest dealer, see page 14.
Matthew Polk's Magnificent Sounding New SDA 2A

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

SDA 2A
$499.00 ea

Digital Disc Ready
Matthew Polk’s magnificent sounding new 3rd generation SDA-2A incorporates many new advances pioneered in his top-of-the-line Signature Edition SR5s. It achieves stunningly lifelike 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/leftear, right channel/right ear), like headphones. The result is dramatically improved stereo separation, detail and three-dimensional imaging.

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 SR3s and SR3-2 including 1: full complement sub-woofer bass for deeper, fuller, tighter and more dynamic bass response; 2: phase coherent time-compensated driver alignment for better focus, lower-coloration smoother, cleaner, more coherent midrange and improved front-to-back depth and; 3: bandwidth-optimized dimensional signal for 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.

"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 separate set of drivers which radiates a 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”.

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

No matter what your budget is there is a super 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.

“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 cross-talk 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.

polkaudio
The Speaker Specialists®

5661 Metro Drive, Baltimore, Md. 21215
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 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 receiver with Pioneer's exclusive Non-Switching "Type II Vari-Bias" 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" 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.

CATCH THE SPIRIT OF A TRUE PIONEER.
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Get a Great Picture and Spectacular Stereo with Radio Shack's New VCRs

HQ System Plus Built-in Stereo TV Tuners

These new Realistic® VHS decks have the HQ system for sharper video, plus an MTS/SAP tuner for stereo TV and second-language broadcasts. Just connect either model to your stereo system as you would an audio deck.

Built-in Comb Filters and VHS Hi-Fi System

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 $26 per month*.

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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'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 Bose-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 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.

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.

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

The black driver housings are scratch-resistant and have wire mesh grills. 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/videdisc 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 140 lines of horizontal resolution and 45 dB video signal-to-noise ratio.
Still don't see it? That's the whole idea behind Koss' revolutionary infrared stereophone 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 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.


CAN YOU FIND THE STEREOPHONE CORD IN THIS PICTURE?
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 connection 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.

**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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A centaur's horn cries hauntingly. A siren's song whispers untold promises. For listeners with discerning ears, those rare and magical sounds can be a reality. A reality evoked by a speaker possessing a higher fidelity. Altec Lansing®

How did Altec Lansing bring this world to life? By creating the ideal materials to more perfectly recreate the timbre, texture and power of every musical composition. Carbon Fiber Woofers for soft passages that come across as dramatically as loud passages. A Polyimide Mid Range and Tweeter for rich, uncolored sound. And to coordinate these components for remarkably true-to-life sound, we delivered the “art of balance.” Even our hand-crafted cabinets have been specially
designed for optimum musicality. The result? Speakers so pure, so uncompromising, they capture the very soul of sound.

If you have an uncompromising ear, measure it against our new line of loudspeakers. And hear what others only imagine.

Altec Lansing is sold only by leading high fidelity retailers. For information and the name of your nearest Altec Lansing dealer, call 1-800-ALTEC 88. (In PA, 717-296-HIFI). In Canada call 416-496-0587 or write 265 Hood Road, Markham, Ontario, Canada L3R 4N3.

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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.

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
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.

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 3 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 ±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.

Our new UX tapes deliver higher highs, lower lows and wider dynamic range.

If you’re going to listen to music at all, you may as well get it all. No matter how high or low, how loud or soft. Captured so faithfully that trying one of these new tapes at least once is something you owe yourself And your music.

Each of these four new UX tapes represents the kind of advancement of music reproduction you’ve come to expect from Sony. UX-ES, for instance, offers the best frequency response of any Type II tape we’ve ever formulated. Yet UX-PRO actually goes one better with a ceramic tape guide that yields the most incredibly quiet tape housing Sony has ever produced.

Sony UX tapes. Now when a musician really extends himself, so will your tape.
A Denon amp vs. its only competition.
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.
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.

Give us a foot... and we’ll give you a concert!

We’ve packed more musical perfection into one square foot than you may believe possible. The three-way Design Acoustics PS-8a speaker system handles up to 200 watts of power, yet is sensitive to the most delicate sounds you can hear.

Part of the secret is our Point Source design, with the smallest possible baffle to eliminate destructive sound diffraction by 40%. Plus a down-firing woofer that delivers enhanced bass response. And our Optimized Decade Crossovers™ which insure clean, clear sound in the critical mid-range while improving stereo imaging.

Be prepared for a delightful surprise when you hear the Design Acoustics PS-8a for the first time. And another surprise when you hear the low cost. Write today for your nearest Design Acoustics dealer. Great stereo is just two square feet away.

PS-8a Three-way Point Source Speaker System

DESIGN™ ACOUSTICS
An Audio-Technica Company
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Panasonic puts more power in the dash than most cars have under the hood.

The 90-Watt AM/FM Cassette Car Stereo.

It goes from 0 to 90 watts in less than 1.0 second. It gives you a choice of Dolby B & C plus dbx. So you not only reduce tape noise, but eliminate it.

And its Full Logic Control with easy glide in and out loading will help keep your tapes from being jammed or destroyed. It's the new Panasonic CQ-E650 AM/FM Cassette Car Stereo with 90 watts of power.

And it's just one of a new line of Panasonic car stereos that come loaded with state-of-the-art sophistication. Example: electronic tuning that automatically searches for and locks in the strongest signals.

A Hyper tuner that uses three separate systems to help eliminate interference.

Available on models CQ-E452 and CQ-E352 only.

A built-in jack allows you to play your portable CD Player through your Car Audio System. And, of course, auto reverse is standard on most every Panasonic car stereo.

There's even a multi-function display that on some models actually changes from a soft orange to green when you go from radio to cassette.

So the next time you take to the road, take along a Panasonic car stereo. You'll experience a power that will move you like never before.

Panasonic® just slightly ahead of our time.
THE ARMY CALLS IT CARTOGRAPHY.
HE CALLS IT THE START OF A CAREER.

For SP4 Mario Canedo, Army skill training in cartography is helping set his career path for life. At first, Mario didn't know what kind of career to take up. His father always asked him what he was going to do with his life, but Mario never really had any plans for his future. Then Army training helped him to focus on his abilities and interests.

Now he's an Army cartographer. He creates maps for the infantry and artillery which show the contours and characteristics of the terrain such as the hills, valleys, lakes and rivers.

Mario has now built up enough confidence and experience to make cartography a career if he chooses. Even his father is surprised at how much Mario has grown.

Army experience is helping Mario feel better about his future. And it can help you or someone you know to do the same.

The Army provides the opportunity to explore any of dozens of technical fields. To find out more, visit your local Army Recruiter, or call toll-free 1-800-USA-ARMY.
The concert continues to get better with Ford JBL Audio Systems.

Announcing another Ford first: The long awaited Compact Disc for the Lincoln Town Car.

Start with the very best high fidelity music systems we offer: Ford JBL Audio Systems.

- 12 JBL speakers including 2-6" × 9" woofers, 2-3½" midrange speakers and 2-7½" tweeters located in the rear deck; 2-5¼" woofers mounted in the doors, and 2 tweeters and 2 midrange speakers in the instrument panel. Selective frequency fading so all woofers remain in operation at controlled levels when faded front/rear.

- 140 watts of total system power—4 amplifiers, 35 watts per channel into 4 ohms at 1000 Hz with .07% THD. 105 dB SPL maximum acoustic output. Excursion control computer with continuously variable loudness compensation and automatic overload protection.

Then add the pure, unparalleled performance of the new Compact Disc player to digitally deliver frequency response spanning the entire audio spectrum without distractions of noise or hiss.

The Compact Disc not only lets you experience the total capacity of a Ford JBL Audio System, it establishes all new standards for clarity, realism and dynamic range in automotive sound.

- Performance features of the Compact Disc player include frequency response at 5 to 20,000 Hz with less than .05% THD, dynamic range greater than 90 dB, signal-to-noise ratio greater than 90 dB and channel separation greater than 85 dB.

- Convenience features of the Compact Disc player include direct loading, automatic reload, automatic and manual music search, dual repeat modes, instant return/replay with digital LED display and fully illuminated control symbols.

Hear for yourself just how much better an audio system can really be, exclusively at your Lincoln-Mercury dealer today.
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 of 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 phonograph 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 phonograph cartridges can damage records or increase surface noise?
FRANCES O. MANOY
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-amp.

LONG LINES
WHAT IS THE MAXIMUM USEABLE 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. There are two facts 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 reorient- ing 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-901TX 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

It’s not important at all. The key question is performance, not how it is achieved. Good analog filters can work very 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.
Announcing the Boston Acoustics T1000 tower speaker system. It elevates stereo music reproduction to a new, rarified level of realism. Yet its slender tower architecture requires very little floor space.

We engineered the T1000 in a distinctive new way. Our new midrange driver is large, letting it reproduce far more of the important mid-frequency information than a smaller driver can. In addition, we placed it – and our CFT-5 dome tweeter – in the highest portion of the tower. As a result, all the directionally important mid and high frequencies emanate together at ear level. Just as with live music.

This unique architecture also frees the dual woofers to concentrate on bass reproduction alone. In fact, the Boston T1000 tower system lets you enjoy the entire tonal range of music, including the very lowest octave. With a wide dynamic range that does full justice to digital sources. And with stereo imaging that’s pinpoint precise.

For a descriptive T1000 brochure, just send us your name and address. Boston Acoustics, Inc., Department HT, 247 Lynnfield Street, Peabody, MA 01960. (617) 532-2111.
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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 unnecessarily 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. Large record companies feel threatened by the fact that RDAT may give small labels.

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. It is likely to continue in the foreseeable future. Unofficial reports of low production yields (less than 80 percent) and tales of misleadingly optimistic official figures still abound. It even took Polygram about two years after the introduction of the system to confidently produce CD’s 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 outproduce 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 expensive 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 let me 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 RDAT’s, as long as somebody is willing to pay for them.
UNPRECEDENTED INTRODUCTORY OFFER.

BUY A NEW SHURE SV40 CD PLAYER.
GET A SHURE V15 TYPE IV-MR CARTRIDGE WORTH $180—FREE.

Nobody else could make this offer because nobody but Shure brings you a premier-quality CD player and the legendary Shure V15 Type IV-MR Cartridge. It's the best of two audio worlds.

The V15 Type IV-MR provides not only superb sound reproduction, but also excellent protection against wear and damage to your invaluable record collection. It will enable you to continue enjoying albums that could be impossible to replace at any price.

OUTSTANDING SOUND.
Crisp, clear sonic quality comes through via full 16-bit digital processing. The SV40 also offers sophisticated Dual Break Point™ filter sets that remove extraneous high frequency energy without affecting the music. Our LONGLIFE™ 3-beam laser tracking system automatically compensates for disc imperfections, to make certain nothing interrupts the flow of incredible sound.

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Unlike some competitive units requiring air vents and cooling fins, the SV40 utilizes highly efficient, cool-running components designed to extend the operating life of its solid state laser, digital processing circuitry, and mechanical systems. That's why you can expect more than 7,000 hours of listening pleasure, free from worry about the high cost of laser replacement.

5-YEAR LASER WARRANTY.*
It's the first and only one in the industry. And another great reason to add the SV40's superior transparency and realism to your home entertainment system now. Purchase before January 31, 1987 and get the Shure V15 Type IV-MR Cartridge FREE. For the name of your nearest dealer, call 1-800-257-4873. (In Illinois 1-800-624-8522)


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SHURE®
MAKING THINGS THE WAY THEY SHOULD SOUND FOR OVER 60 YEARS.
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.
TDK BRINGS OUT THE RECORDING ARTIST IN YOU.

Backspin on your volleys is great. Backspin on your music is no. That’s why TDK developed a series of high-fidelity audio cassettes that give you a power serve of pure lifetime performance.

TDK SA delivers an unmatched high end with extra sensitivity for all of your most sophisticated musical favorites.

For music that’s all over the court, we’ve developed an improved TDK SA-X, which is now the world’s lowest-noise tape. It reaches high and low to deliver crisp, clear sound without distortion.

And for error-free follow-through in recording from compact discs, we offer TDK FX-S. It captures all the dynamic purity of the original digital sound like no other.

TDK high-fidelity audio cassettes. They’ll sure improve the way you play—your music.

TDK also manufactures a quality line of video cassettes and floppy disk products.

© 1986 TDK Electronics Corp.
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 6½-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 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 "phasing" 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 beaminess 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 average 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 harmonic) 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 Polk 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.

**TEST REPORTS**

**B&W Matrix 2 Loudspeaker**

**DIMENSIONS:** 10'/By 23'/INCHES (FRONT), 12'/INCHES DEEP; 36 INCHES HIGH ON ACCESSORY STANDS. **PRICE:** $7,398 PER PAIR, ACCESSORY STANDS, $229 PER PAIR. **WARANTY:** "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.

**THAT 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 famed 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 midbass (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...
One of the most advanced cassette decks in recorded history.

With its advanced technology and features, Yamaha's new K-1020 cassette deck makes most others seem like ancient history.

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

YAMAHA
ROUN D RESPONSE CHARACTERISTICS

-10 0 10 20 30 40 dB

Hz 20 50 100 200 500 1K 2K 5K 10K 20K

- boundary-dependent region
- on-axis response
- off-axis (0°) response

SENSITIVITY (at 1 meter; 2.8-volt pink noise) 87.5 dB SPL
AVERAGE IMPEDANCE (250 Hz to 6 kHz) 5.6 ohms

The unusually detailed (and utterly literate) manual that comes with the speakers ducks the question of exact recommended placement, containing itself with repeating the standard (n nums) 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 help to avoid early reflections and also minimize bass support from those reflections.

Measured this way, the on-axis frequency-response curve is extremely flat (±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 woofers' range. DSL's near-field measurements suggest a crossover frequency near 2.5 kHz. Nothing suggesting tweeter beam members 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 2 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 way 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 ½ 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 audibility of the overall contribution 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 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 Matrix construction'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.

KEF 107
Loudspeaker

Dimensions: Speaker, 46 by 13 inches (front), 17% inches deep plus clearance for connections; Kube equalizer, 2½ by 6½ inches (front), ½ inches deep plus clearance for connections. Price: $3,000 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.
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* Equalizer section not operable by remote.
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*100 Watts (RMS), 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 i) 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 oyster, 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 ±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 overprominent 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:

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**Room Response Characteristics**

<table>
<thead>
<tr>
<th>Frequency (Hz)</th>
<th>20</th>
<th>50</th>
<th>100</th>
<th>200</th>
<th>500</th>
<th>1K</th>
<th>2K</th>
<th>5K</th>
<th>10K</th>
<th>20K</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensitivity (dB SPL)</td>
<td>91</td>
<td>89</td>
<td>87</td>
<td>85</td>
<td>83</td>
<td>81</td>
<td>79</td>
<td>77</td>
<td>75</td>
<td>73</td>
</tr>
</tbody>
</table>

**Extension Settings**

- **1** (25 Hz): Boosts response at 20 Hz by 4.5 dB
- **2** (35 Hz): Boosts response at 20 Hz by 8 dB
- **3** (25 Hz): Boosts response at 20 Hz by 10.5 dB

**Q-Factor**

- **0.5** (0.7): Optimum for most recordings
- **0.3** (0.7): For recordings with dry or reverberant acoustic

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*The Kube contains important equalisation and unit pair matching elements.*

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*The Kube is an integral part of the speaker design.*

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*For best results, KEF recommends the controls be set in that order so as not to end up with a confused and incorrect result.*
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 ±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-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 2½ percent. At a very loud 100 dB SPL, the speaker was clearly in trouble, with 63-Hz distortion of 5½ percent (!) and distortion between 200 Hz and 1 kHz running from 4½ to 8½ 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 distortion 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 vibrancy 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.

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The Dali 7 offers a compact two-way system, designed to stand directly on the floor. 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

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**TEST REPORTS**

**Dali 7 Loudspeaker**

**MANUFACTURED 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;**
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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 7-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 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 lowest end). 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 proficient care with phase relationships.

The impedance curve is fairly typical of a three-way vented system. But the vent resonance 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 0.5 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)
S\textsc{everal} \text{qualities} \text{distinguish the} \text{Connoisseur} \text{Series from other \text{Acoustic Research loudspeakers}:} \text{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.}

\text{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.}

\text{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 6½-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.}

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

\text{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.}

\text{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.}

\text{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.}

\text{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.}

\text{In the listening room, we preferred the speakers away from the walls, which apparently reduced the prominence of the range between 60 and 290 Hz from the level shown in the graph. With the speakers in that position, the bass was full and true and the balance...}
SURPRISE: MAKING
HOME MOVIES IS EASY!
WE EXAMINE THE FEATURES
OF MORE THAN
45 CAMCORDERS.

LIGHTS,
CAMCORDER,
ACTION!

BY FRANK LOVECE

AMCORDERS—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, cam-
corders have rekindled the home-movie craze. Unit sales may top one mil-
lion 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 intro-
duced its seminal Betamovie camcorder three years ago. Since then, three
other video formats have jumped in: full-size VHS, the compatible subfor-
mat 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.
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

All 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 (and heavy) VCR over your shoulder. A camcorder always with you, 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.

## TAKING AIM

The 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 a 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.
<table>
<thead>
<tr>
<th>MODEL</th>
<th>WEIGHT</th>
<th>LENS</th>
<th>INFRARED/ AUTOFOCUS</th>
<th>IMAGE DEVICE</th>
<th>NO</th>
<th>AUTO-REPLAY FEATURES</th>
<th>OTHER FEATURES</th>
<th>DIRECT PLAYBACK</th>
<th>MINIMUM ILLUMINATION</th>
<th>PRICE</th>
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<tbody>
<tr>
<td>GENERAL ELECTRIC 9-9606</td>
<td>5½ lbs. f/1.2, 6.1 (9-54mm) power zoom w/macro</td>
<td>Yes ⅛-inch high-band Newvicon</td>
<td>Yes</td>
<td>Freeze frame; forward/reverse scan</td>
<td>Auto fade-in/out; quick review; time/date generator; audio dub; light shoe</td>
<td>Yes</td>
<td>7 lux</td>
<td>$1,500</td>
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<td>Yes</td>
<td>7 lux</td>
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<td>5½ lbs. f/1.2, 8.1 (8.5-64mm) power zoom w/macro</td>
<td>Yes CCD</td>
<td>Yes</td>
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<td>Same as above</td>
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<td>GOLDSTAR GVM-70AF</td>
<td>6½ lbs. f/1.4, 6.1 (11.5-70mm) power zoom w/macro</td>
<td>CCD</td>
<td>No</td>
<td>Freeze frame; forward/reverse scan</td>
<td>Light shoe</td>
<td>Yes</td>
<td>19 lux</td>
<td>$1,700</td>
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<td>5½ lbs. f/1.2, 6.1 (8-51mm) power zoom w/macro</td>
<td>Yes ⅛-inch high-band Saticon</td>
<td>Yes</td>
<td>Freeze frame; forward/reverse scan</td>
<td>Auto/manual iris (no separate backlight control); quick review; light shoe</td>
<td>Yes</td>
<td>7 lux</td>
<td>$1,600</td>
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<td>HITACHI VM-5000A</td>
<td>5½ lbs. f/1.2, 6.1 (11.5-69mm) power zoom w/macro</td>
<td>Yes MOS</td>
<td>Yes</td>
<td>Same as above</td>
<td>Same as above</td>
<td>Yes</td>
<td>7 lux</td>
<td>$1,800</td>
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<td>INSTANT REPLAY 66-IT3</td>
<td>6½ lbs. f/1.2, 6.1 (9-54mm) power zoom w/macro</td>
<td>Yes ⅛-inch Newvicon</td>
<td>No</td>
<td>Freeze frame; forward/reverse scan</td>
<td>PAL, SECAM and NTSC-compatible; quick review; time/date generator; audio dub; light shoe</td>
<td>Yes</td>
<td>10 lux</td>
<td>$1,600</td>
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<td>INSTANT REPLAY 92-IT3</td>
<td>5½ lbs. f/1.2, 6.1 (9-54mm) power zoom w/macro</td>
<td>Yes ⅛-inch Newvicon</td>
<td>Yes</td>
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<td>Same as above</td>
<td>Not available</td>
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<td>MAGNAVOX VR-8292</td>
<td>5½ lbs. f/1.2, 6.1 (9-54mm) power zoom w/macro</td>
<td>Yes ⅛-inch Newvicon</td>
<td>Yes</td>
<td>Freeze frame; forward/reverse scan</td>
<td>Quick review; time/date generator; audio dub; light shoe</td>
<td>With optional V-80071 RF adapter ($190)</td>
<td>7 lux</td>
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<tr>
<td>MAGNAVOX VR-8292</td>
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<td>Yes CCD</td>
<td>Yes</td>
<td>Same as above</td>
<td>Same as above</td>
<td>Yes</td>
<td>7 lux</td>
<td>Not available</td>
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<td>MINOLTA CR-1200SAF</td>
<td>5½ lbs. f/1.2, 6.1 (11.5-69mm) power zoom w/macro</td>
<td>Yes MOS</td>
<td>Yes</td>
<td>Freeze frame; forward/reverse scan</td>
<td>Auto/manual iris (no separate backlight control); quick review; time/date generator; light shoe</td>
<td>Yes</td>
<td>7 lux</td>
<td>$2,085</td>
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<tr>
<td>MITSUBISHI HS-F10UR</td>
<td>5½ lbs. f/1.2, 6.1 (8.5-51mm) power zoom w/macro</td>
<td>Yes ⅛-inch high-band Saticon</td>
<td>No</td>
<td>Freeze frame; forward/reverse scan</td>
<td>Auto iris (no override or separate backlight control); video gain; audio dub; light shoe</td>
<td>Yes</td>
<td>7 lux</td>
<td>$1,550</td>
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<td>NEC V-20U</td>
<td>5½ lbs. f/1.2, 6.1 (8.5-51mm) power zoom w/macro</td>
<td>Yes CCD</td>
<td>Yes</td>
<td>Freeze frame; forward/reverse scan</td>
<td>Auto/manual iris (no separate backlight control); video gain; quick review; light shoe</td>
<td>Yes</td>
<td>10 lux</td>
<td>$1,800</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OLYMPUS VX-403</td>
<td>5½ lbs. f/1.2, 8.1 (8.5-68mm) power zoom w/macro</td>
<td>Yes CCD</td>
<td>Yes</td>
<td>Freeze frame; forward/reverse scan</td>
<td>Auto fade-in/out; quick review; audio dub; light shoe</td>
<td>Yes</td>
<td>7 lux</td>
<td>Not available</td>
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<tr>
<td>PANASONIC PV-210</td>
<td>5½ lbs. f/1.2, 6.1 (9-54mm) power zoom w/macro</td>
<td>Yes ⅛-inch Newvicon</td>
<td>Yes</td>
<td>Freeze frame; forward/reverse scan</td>
<td>Auto fade-in/out; quick review; time/date generator; audio dub</td>
<td>With optional PV-A22M RF adapter ($190)</td>
<td>7 lux</td>
<td>$1,500</td>
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<td>PANASONIC PV-220</td>
<td>Same as PV-210, but with RF adapter and wired record/pause remote control.</td>
<td>Yes</td>
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<td>1.700</td>
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<td>MODEL</td>
<td>WEIGHT</td>
<td>LENS</td>
<td>IRIS</td>
<td>AUTOFOCUS</td>
<td>IMAGE DEVICE</td>
<td>P.C.</td>
<td>OTHER FEATURES</td>
<td>BUILT-IN FEATURES</td>
<td>MINIMUM ILLUMINATION</td>
<td>PRICE</td>
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<td><strong>VHS</strong></td>
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<tr>
<td><strong>PANASONIC</strong></td>
<td>PV-300</td>
<td>5 1/2 lbs.</td>
<td>f/1.2, 8:1 (8.5–68mm)</td>
<td>power zoom w/macro</td>
<td>Yes</td>
<td>CCD</td>
<td>Same as PV-220</td>
<td>Same as PV-220</td>
<td>7 lux</td>
<td>$2,000</td>
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<tr>
<td><strong>PENTAX</strong></td>
<td>PV-C33A</td>
<td>5 1/2 lbs.</td>
<td>f/1.2, 6:1 power zoom w/macro</td>
<td>Yes</td>
<td>1/2-inch Saticon</td>
<td>Freeze frame; forward/reverse scan</td>
<td>Auto/manual iris (no separate backlight control); quick review</td>
<td>Not available.</td>
<td>7 lux</td>
<td>$1,700</td>
</tr>
<tr>
<td><strong>PENTAX</strong></td>
<td>PV-C55A</td>
<td>5 1/2 lbs.</td>
<td>f/1.2, 6:1 power zoom w/macro</td>
<td>Yes</td>
<td>MOS</td>
<td>Same as above</td>
<td>Same as above</td>
<td>Not available.</td>
<td>7 lux</td>
<td>Not available.</td>
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<td><strong>PHILCO</strong></td>
<td>VCR-801</td>
<td>5 1/4 lbs.</td>
<td>f/1.2, 6:1 (8–48mm)</td>
<td>power zoom w/macro</td>
<td>Yes</td>
<td>1/2-inch Newvicon</td>
<td>Freeze frame; forward/reverse scan</td>
<td>Quick review; time/date generator; audio dub; light shoe</td>
<td>7 lux</td>
<td>Not available.</td>
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<td><strong>QUASAR</strong></td>
<td>VM-11</td>
<td>5 1/2 lbs.</td>
<td>f/1.2, 6:1 (9–54mm)</td>
<td>power zoom w/macro</td>
<td>Yes</td>
<td>1/2-inch Newvicon</td>
<td>Freeze frame; forward/reverse scan</td>
<td>Auto fade-in/out; quick review; time/date generator; light shoe</td>
<td>7 lux</td>
<td>$1,770</td>
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<td><strong>QUASAR</strong></td>
<td>VM-20</td>
<td>5 1/2 lbs.</td>
<td>f/1.2, 8:1 (8.5–68mm)</td>
<td>power zoom w/macro</td>
<td>Yes</td>
<td>CCD</td>
<td>Same as above</td>
<td>Same as above</td>
<td>7 lux</td>
<td>$1,970</td>
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<td><strong>RCA</strong></td>
<td>CMR-200</td>
<td>5 1/2 lbs.</td>
<td>f/1.2, 6:1 (8.5–51mm)</td>
<td>power zoom w/macro</td>
<td>Yes</td>
<td>1/2-inch Saticon</td>
<td>Freeze frame; forward/reverse scan</td>
<td>Auto/manual iris (no separate backlight control); quick review</td>
<td>7 lux</td>
<td>$1,300</td>
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<tr>
<td><strong>RCA</strong></td>
<td>CMR-300</td>
<td>5 1/2 lbs.</td>
<td>f/1.2, 6:1 (11.5–69mm)</td>
<td>power zoom w/macro</td>
<td>Yes</td>
<td>MOS</td>
<td>Same as above</td>
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<td>7 lux</td>
<td>$1,500</td>
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<td><strong>SEARS</strong></td>
<td>33721</td>
<td>5 1/4 lbs.</td>
<td>f/1.2, 6:1 (8–51mm)</td>
<td>power zoom w/macro</td>
<td>Yes</td>
<td>1/2-inch Newvicon</td>
<td>Freeze frame; forward/reverse scan</td>
<td>Auto/manual iris (no separate backlight control); quick review</td>
<td>7 lux</td>
<td>$1,290</td>
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<td><strong>SHARP</strong></td>
<td>VC-C10UAH</td>
<td>5 1/2 lbs.</td>
<td>f/1.4, 6:1 (9–54mm)</td>
<td>power zoom w/macro</td>
<td>Yes</td>
<td>1/2-inch Newvicon</td>
<td>Freeze frame; forward/reverse scan</td>
<td>Auto/manual iris (no separate backlight control); quick review</td>
<td>10 lux</td>
<td>Not available.</td>
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<td><strong>SHARP</strong></td>
<td>VC-C20UAH (available late '86)</td>
<td>5 1/4 lbs.</td>
<td>f/1.4, 6:1 (11–66mm)</td>
<td>power zoom w/macro</td>
<td>Yes</td>
<td>CCD</td>
<td>Same as above</td>
<td>Linear-track stereo; stereo mike; quick review; date generator; audio dub; light shoe</td>
<td>Not available.</td>
<td>Not available.</td>
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<td><strong>SYLVANIA</strong></td>
<td>VCC-151</td>
<td>5 1/2 lbs.</td>
<td>f/1.2, 6:1 (9–54mm)</td>
<td>power zoom w/macro</td>
<td>Yes</td>
<td>1/2-inch Newvicon</td>
<td>Freeze frame; forward/reverse scan</td>
<td>Quick review; time/date generator; audio dub; light shoe</td>
<td>7 lux</td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>TEKNIKA</strong></td>
<td>C-6010</td>
<td>5 1/2 lbs.</td>
<td>f/1.2, 6:1 (9–54mm)</td>
<td>power zoom w/macro</td>
<td>Yes</td>
<td>1/2-inch Newvicon</td>
<td>Freeze frame; forward/reverse scan</td>
<td>Auto fade-in/out; quick review; time/date generator; audio dub; light shoe</td>
<td>7 lux</td>
<td>$1,700</td>
</tr>
</tbody>
</table>

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
<table>
<thead>
<tr>
<th>MODEL</th>
<th>WEIGHT</th>
<th>LENS:</th>
<th>INFRARED AUTOFOCUS</th>
<th>IMAGE DEVICE</th>
<th>RECORD/CAMERA CONTROL FEATURES</th>
<th>OTHER FEATURES</th>
<th>DIRECT TV PLAYBACK</th>
<th>MINIMUM ILLUMINATION</th>
<th>PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIWA CV-B0</td>
<td>5 1/2 lbs</td>
<td>f/1.4; 6:1 (12-72mm)</td>
<td>Yes</td>
<td>CCD</td>
<td>SP/SP, LP; freeze frame; forward/reverse scan</td>
<td>Light shoe</td>
<td>Yes</td>
<td>19 lux</td>
<td>$1,800</td>
</tr>
<tr>
<td>CANON VM-E1</td>
<td>4 3/4 lbs</td>
<td>f/1.2; 6:1 (8.5-51mm)</td>
<td>Yes</td>
<td>1/2-inch high-band Saticon</td>
<td>SP/SP, LP; freeze frame; forward/reverse scan</td>
<td>Auto/manual iris (no separate backlight control); auto fade-in/out</td>
<td>19 lux</td>
<td>$1,600</td>
<td></td>
</tr>
<tr>
<td>GOLDSTAR GS-8AF</td>
<td>5 lbs.</td>
<td>f/1.4; 6:1 (11.5-70mm)</td>
<td>Yes</td>
<td>CCD</td>
<td>SP/SP, LP; freeze frame; forward/reverse scan</td>
<td>Light shoe</td>
<td>Yes</td>
<td>19 lux</td>
<td>$1,700</td>
</tr>
<tr>
<td>INSTANT REPLAY ULTRA HC1</td>
<td>2 3/4 lbs</td>
<td>f/1.6; manual, 3-position fixed focus w/macro</td>
<td>No</td>
<td>CCD</td>
<td>SP (record only)</td>
<td>Optical viewfinder, but transmits RF signals (picture only) wirelessly to user-supplied monitor/TV; price includes modified Sony EV-C8U VCR</td>
<td>20 lux</td>
<td>$1,400</td>
<td></td>
</tr>
<tr>
<td>KODAK MVS-440</td>
<td>2 3/4 lbs</td>
<td>f/1.2; 6:1 (9-54mm)</td>
<td>No</td>
<td>1/2-inch Newvicon</td>
<td>—</td>
<td>Auto fade-in/out; positive/negative imaging</td>
<td>10 lux</td>
<td>$700</td>
<td></td>
</tr>
<tr>
<td>KODAK MVS-460</td>
<td>2 3/4 lbs</td>
<td>f/1.2; 6:1 (9-54mm)</td>
<td>Yes</td>
<td>1/2-inch Newvicon</td>
<td>—</td>
<td>Same as above</td>
<td>10 lux</td>
<td>$1,000</td>
<td></td>
</tr>
<tr>
<td>KODAK MVS-3000 docking VCR</td>
<td>2 lbs.</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>SP, LP/SP, LP; freeze frame; frame advance; slow motion; forward/reverse scan</td>
<td>With optional MVS-52 RF converter ($60)</td>
<td>—</td>
<td>$800</td>
<td></td>
</tr>
<tr>
<td>KODAK MVS-5000 docking VCR</td>
<td>2 lbs.</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>Same as above</td>
<td>—</td>
<td>$1,000</td>
<td></td>
</tr>
<tr>
<td>KYOCERA KD-200</td>
<td>5 1/2 lbs</td>
<td>f/1.4; 6:1 (12-72mm)</td>
<td>Yes</td>
<td>CCD</td>
<td>SP/SP, LP; freeze frame; forward/reverse scan</td>
<td>Quick review; edit-mode signal amp; light shoe</td>
<td>Yes</td>
<td>19 lux</td>
<td>$1,750</td>
</tr>
<tr>
<td>NEC EM-ABU</td>
<td>5 lbs.</td>
<td>f/1.2; 6:1 (9-54mm)</td>
<td>Yes</td>
<td>CCD</td>
<td>Speeds not avail.; freeze frame; frame advance; forward/reverse scan</td>
<td>Auto/manual iris (no separate backlight control); quick review; edit-mode signal amp; light shoe</td>
<td>7 lux</td>
<td>Not avail.</td>
<td></td>
</tr>
<tr>
<td>OLYMPUS VX-801</td>
<td>3 1/4 lbs</td>
<td>f/1.2; 6:1 (9-54mm)</td>
<td>Yes</td>
<td>CCD</td>
<td>SP/SP; freeze frame; frame advance; forward/reverse scan</td>
<td>Auto fade-in/out; light shoe</td>
<td>Yes</td>
<td>7 lux</td>
<td>$1,850</td>
</tr>
<tr>
<td>SANYO VM-8</td>
<td>5 1/2 lbs</td>
<td>f/1.4; 6:1 (12-72mm)</td>
<td>Yes</td>
<td>CCD</td>
<td>SP/SP, LP; freeze frame; forward/reverse scan</td>
<td>Quick review; edit-mode signal amp; light shoe</td>
<td>Yes</td>
<td>19 lux</td>
<td>$1,470</td>
</tr>
<tr>
<td>SONY CCD-MBU HandyCam</td>
<td>2 1/4 lbs</td>
<td>f/1.6; manual, 3-position fixed focus</td>
<td>No</td>
<td>CCD</td>
<td>SP (record only)</td>
<td>Optical viewfinder; no microphone or earphone jacks</td>
<td>No</td>
<td>25 lux</td>
<td>$1,300</td>
</tr>
<tr>
<td>SONY CCD-MBU HandyCam Sports</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>Same as CCD-MBU but with heavy-plastic, water-resistant shell for outdoor (but not underwater) shooting</td>
<td>—</td>
<td>$1,350</td>
<td></td>
</tr>
<tr>
<td>SONY CCD-V8ABU</td>
<td>5 1/2 lbs</td>
<td>f/1.4; 6:1 (12-72mm)</td>
<td>Yes</td>
<td>CCD</td>
<td>SP/SP, LP; freeze frame; forward/reverse scan</td>
<td>Quick review; edit-mode signal amp; light shoe</td>
<td>Yes</td>
<td>19 lux</td>
<td>$1,800</td>
</tr>
</tbody>
</table>
(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/tuner.) 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.
BY KENNETH L. KANTOR

WHAT'S NEW IN SPEAKER TESTING

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

MEASURING 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 speakers, 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

Between 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

The 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 the 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 waves (continued on page 58).
The 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 locations 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.
THE 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 ±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 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

IM-1 LOUDSPEAKER

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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 method called "windowing" enables the process 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 suggests a way 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.

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.

(Continued from page 55)
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!

“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.”


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.”

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.”

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Energy Loudspeakers, 135 Torbay Road, Markham, Ontario L3R 1G7 – (416) 475-0050 • TLX 06-986689
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 affect 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.
SOMETIMES THE MAN WHO HAS EVERYTHING HAS A FEW THINGS TOO MANY.

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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. 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

DO 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 recoupling 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, Vincent 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
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THE #1 CHOICE

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

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).

At 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.

ENDANGERED SPECIES
once again be recording.

With the board-approved EMG in his quiver, Pastre 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 data 1984 through 1986 on what is, more or less, the only list 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, Philadelphoa Orchestra, and Boston Symphony combined released about the same number of new records annually as did the London Philharmonia alone. The recording heartland 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 labels, 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 Barenboim 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 big 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 151.

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 records 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 Toelzitz 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." Toelzitz 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. "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 orchestras 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 orchestra 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 project ed 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.
MOZART, BEETHOVEN SYMPHONIES

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, MA VLAST. SMETANA CALLED THE QUARTET "A REMEMBRANCE OF MY LIFE AND THE CATASTROPHE OF DEAFNESS," THE LATTER WELL DEPICTED IN THE FINAL MOVEMENT.


STRAVINSKY WORKS: LONDON SINPHONIETTA

FOR ANYONE WHOSE ACQUAINTEANCE WITH STRAVINSKY SKIPS FROM THE MUSICAL MELTDOWN OF LE SACRE DU PRINTEMPS TO THE DODECAPHONY OF AGON, THIS DELIGHTFUL POUPOUILL OF HIS ROMANIC 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 SINPHONIETTA. RECORDED IN 1980 (WHY THE SIX-YEAR WAIT?), THE SOUND IS SIMPLY SUPERB. PLAYING TIME: 52:38. (LONDON 417 114-2.)

MOZART, SCHUBERT: LUPU, PERAHIA
THE PERFECTION EVEN OF MOZART'S GALANT MUSIC PROVOCES 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 ORIGINIAL 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 UTERANCES EVER COMPOSED.) ONLY SLIGHTLY LOWER ON THE SLOPES OF MUSIC'S MOUNT PARNASSUS IS HIS FANTAISIA, OP. 103, FEATURING DAVID GROSS AND IAN LUPU. THE CD IS FROM A CONCERT GIVEN AT THE LINCOLN CENTER IN NEW YORK IN 1989 AND CONTAINS COMPETENT PERFORMANCES FROM CONDUCTOR ANTON CHAILLY AND THE LONDON SINPHONIETTA. PLAYING TIME: 53:05. (CHAN 8412.)

THE PERFECT 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.

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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
R. E. B.

LEOPOLD STOKOWSKI AND THE HOUSTON SYMPHONY

Sergeri Commissiona 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 Commissiona 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-sixth toasted 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.

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 Music 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. (Oséa-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, 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: SOLOVAK 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 unassuming masterpiece, the Mass in G is distinguished only intermittently by typically Schubertian lyricism and harmonic color. Otherwise, it can seem pompous and mock-sincere, harpered by rather cavalier and perfunctory text setting.

Only soprano Magda Kalmár makes this recording impossible to recommend without reservation. Her vocal tone is pinched out; otherwise it can seem pompous and mock-sincere, harpered by rather cavalier and perfunctory text setting.

Yet it would be wrong to dismiss this otherwise fine release. The Slovak Philharmonic Chorus and Orchestra, under János Ferencsk Hiller'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, though the three soloists—Jutta Bokor, Attila Fülöp, and Kolos Kováts—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 fesit de l'araignie 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.

[An recording of the complete Bacchus et Ariane, performed by L'Orchestre de Paris conducted by Andre Cluytens, is due for release this season on an Erato CD.—Ed.]

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

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.)

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ROSSINI'S "TANCREDI" REVISITED

ROSSINI: Tancredi

In this album version, the opera's recently recovered tragic concluding scene is restored.

The action of the libretto, after Tasso's poem Gerusalemme Liberata (1575) and Voltaire's play Tancrede (1763), takes place in an 11th-century Syracuse besieged by Saracens. The leader of the Senate has commanded his daughter, Armentide, to marry Obazzante, a noble who has agreed to lead the army against the attackers. Armentide, however, loves the Crusader Tancredi, whom Obazzante banished as a child. Tancredi loves her. Armentide sends him an obliquely worded letter urging him to liberate the city. Obazzante intercepts it, and both he and her father misinterpret it as a betrayal of their trust to the leader of the Saracens (who also wants to marry Armentide).
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 Orsazzano only in obedience to her father, he believes she is betraying him, too. Although he has Armenaide's death sentence lifted by duelling Orsazzano 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 timely 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 comparatively dramatic stasis of Tancredi.

In Le Nozze di Figaro, for example, Mozart uses the formal a-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 the 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 caballeta to the same end.

In Tancredi, on the other hand, the series of solo and concerted numbers on texts 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 pretextis 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) pointed out to me that this is a style in which "the solo numbers are intended to give him all the titles he owes 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. . . . [II] 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 repertoire. 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 lower ones. Someone 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! the sordar 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 fioreture more brilliantly than she does, and those are an important feature of Tancredi.

Fioretture—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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The Carver Sonic Holography quartet. Pictured from left to right is the 40001 Preamplifier, the C-9 Sonic Hologram Generator, the Receiver 2000 with remote control and the C-1 Preamplifier.

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found in the printed parts, has brought with
applaud any display, however grotesque, by
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limitations and poor taste, as well as to satis-
(CONTINUED FROM PAGE 72)
portant and absolutely authentic dimension
ends. When properly applied, it adds an im-
merely observes, "Whether modern singers
album, Prof. Gossett slithers away from re-
vised score of Tancredi are less extensive than
singers, embellishments he could reason-
began to write out embellishments in his
letters). Ear-
their own, they must use it for expressive
18th- and 19th -century practice singers in-
less impressively later. (She is the Arme-
way, this is an extraordinarily beautiful
thing by singers with no understanding that
they encumber the music.
As Armeaide. Lella Cuberli sings with
beauty of voice and cohesive musical phrasing
her first scene in Act I, but she sings
less impressively later. (She is the Arme-
naide in a Fonti-Cetra studio recording, too,
with Fiorenza Cossotto and the Cappella
Coloniensis.) The voice of tenor Ernesto Pa-
lacio (Argirio, Armeaide's father) is attract-
tive, except when he strains after the highest
notes. His delivery does not have the light-
ness and ease Luigi Alva's singing had in La
Contadina and Il Barbare di Soglia, which
demonstrated that this was not only possible
but probably what Rossini expected. The
other principals are adequate. The orches-
together, he was an influential radio commen-
tator, a respected teacher at the Royal Acad-
education to put on disc the ten symphonies by his Es-
berwald's four essays stand quite
apart from any other music of the period.
In sheer concision and formal balance,
the works are of a true classicist. They
all last between 25 and 30 minutes, and their
uncommonly healthy vigor, fiery pas-
sion, exquisite humor, and gossamer, quick-
silver 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 vital-
ity, a straightforwardness, and a smiling ex-
troversion that seem to foreshadow another
great symphonist of the North: Carl Nielsen.
Just compare the opening of Berwald's Sym-
phony No. 4 to that of the Dane's Symphony
No. 3 (Sinfonia Espansiva). Berwald's music
was far too bold and original to gain appreci-
ation during his lifetime, and in fact only the
Serieuse was played (once) before his death.
No doubt had he received more encourage-
ment, he might have written several more
symphonies after 1845.
By common consent, Berwald's Third
Symphony (Sinfiora) is the most remark-
able of the lot, the most strikingly original:
The very opening is music of unsurpassed
magic, and the middle movement encom-
passes a scherzo within two slow sections in a
way that Rachmaninoff, 90 years later, was to
revive in his own Symphony No. 5. It is also
the most frequently performed and record-
ed. The noble Sérenus, sometimes looking
forward to Bruckner, is perhaps a deeper ut-
erance (its magnificent slow movement was
played at Berwald's funeral), and the Sym-
phony No. 4 is the lightest and most Haydn-
ish of the bunch—a true comedy, like Bee-
ethoven's Eighth.

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

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

The BRITISH COMPOSER WILLIAM ALWYN DIED
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 far and large the best ever recorded of these marvelous works. Listen to the somber vigor of the outer movements of the Sérénade 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 Sinfonietta, 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 at- tempted 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. 

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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

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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

JANEQUIN:
Chansons (9).

SERMISY:
Chansons (8).


JANEQUIN: Vous avez oublié les cris de Paris, Ung mari se voulant coucher, Du beau Tepin; Or vien co, vren, m’amy, la guerre; La Meusniere de Vernon; L’Amour, la mort, et la vie; Martin menait 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; Dil vient cela, b’lle, je vous supply. Jouyssance vous donneray, Au joly boy; Tu disoys que j’en mourroyes.

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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 Deboves, 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

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Sinfonie; 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:
Soloan.
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, Mesple, Norman, Baldwin; Orchestre du capitole de Toulouse, Ensemble de chambre de l'Orchestre de Paris, Flossan. @ Angel EMI DSCX 3965, July.

SCHUMANN:
Symphonies Nos. 1 and 4.
Vienna Philharmonic Orchestra, Bernstein. @ Deutsche Grammophon 415 274-2, 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.
The Mozart album, in short, is for Brendel fans, the Haydn for Haydn fans.

_Terry Teachout_

**STILL:**

**Symphony No. 3 ("Sunday Symphony")**:

Intrumental and Choral Works.


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 Times; Holy Spirit, Don't You Leave Me), I Feel Like My Spiritial (Lord, I Looked Down the Road; Hard Times; Holy Spirit, Don't You Leave Me).

**DEAN OF AFRO-AMERICAN COMPOSERS, WILLIAM GRANT STILL**

**HERE'S A HOME-CROWNED 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. They came to light in 1983 in Benediktbeuren, that baroque jewel of a monastery not far from Munich.

Pious, roistering, contemplative, rambd, these carmina originated mostly from the Gothers: 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 lusness, and it ammes 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.

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House of Horrors
Scary soundtracks reviewed by our cinema specialist

By Noah André Trudeau

Bernstein, E.:
The Black Cauldron.
Utah Symphony Orchestra, Bernstein. George

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 rhythm 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.

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.

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 underestimate 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 newest trick of all. A deal with the audio devil, perhaps?
GLASS CUTTERS

GLASS: SONGS FROM LIQUID DAYS.

Composer Philip Glass's recent album of songs from his opera Liquid Days is reviewed.

The result should have been as different as the talents of these artists. 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 an operatic relationship between text and music that elsewhere in the cycle proves so elusive.

K. Robert Schwartz

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 an operatic relationship between text and music that elsewhere in the cycle proves so elusive.

K. Robert Schwartz

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

GLASS: 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 accen-
tuation 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 Bench 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.

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K. Robert Schwartz

Popular Beffitting 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 command 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 overshadow 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' 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 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 fructures 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 things (like North Star), often overshadow 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' 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 asides. Only Linda Ronstadt brings a tempered grace to her performances, Vega's "Freezing" and Anderson's "Forgetting."

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EVERY INDIVIDUAL IN SOUTH AFRICA is traumatized by apartheid—the oppressors perhaps more 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
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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 has 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 colonized 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 feed his perceptions of new surroundings. The South African sound that he once eloquently described as being a synthesis of "the carnival music heard every year in Cape Town, the traditional 'colored' music, the Malay strains, and the racial 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, French impressionist and modal reverence, Monksian 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, Stravinsky, Monk, Bud Powell, 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 texture, his music is confident and unerring. Ibrahim likens his rapport with Ward, in particular, to the empathy he once enjoyed with the late Kippy Moeke, "the Charlie Parker of South Africa," in Ibrahim's estimation, and the solitary 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 Malay 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 the Christian customs long before embracing Islam, because the Christian and Moslem communities were very close in Cape Town, as a result of such intermarriage. The Muslims 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."

SAITHMA BEA BENJAMIN ALSO WAS BORN IN CAPE TOWN, IN 1936. She remembers it as a "beauteful place, with mountains, sea, perfect climate, exotic birds, and gorgeous sunsets and sunrises. 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 Tsiidi, ten]. Second, there is my music, and third, the record company [both she and Ibrahim now record for Ekapa, the small label she runs]. 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 Cardenird Heart, a collection of photographs from South Africa. "District Six was a diverse society established over a 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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### Some Items Closeouts:

- Some Limited Quantities.
From Russia with Guitars

VARIOUS ARTISTS:
Red Wave: 4 Underground Bands from the U.S.S.R.
Joanna Stingray, prod. Big Time 6008-1 (2).

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 limp and utterly forgettable; like rock's hardest 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 Grebenshikov, 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 shouted, druggy ballads. Otherwise, Kino uses identical song structures and arranging techniques, albeit with more percussion.

(Continued on page 91)

JAZZ

IGOR BRIL:
Before the Sun Sets.
East Wind MC 20646. (3325 17th St. N.W., Washington, D.C. 20010.)

ALEXEI KUZNETSOV:
Blue Core.
East Wind MC 20648.

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.

(Continued on page 92)
Jeffrey Osborne:

Emotional.

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.

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 riffling on "Chorovod Song," and "No Surrender" has a loose feel that none of 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 sold out 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 of Jeffrey Osborne.

Feeling the pressure of one who walks to the very edge of destruction, the ballads remained gorgeous, as Crazy Glue, Osborne added a funk-rock edge. 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 wish all these bands well, of course, but Osborne is an exceptional talent. I want him to become a superstar.
South Africa." Osborne may be an ambitious performer, but he's no sucky Negro scared of alienating members of the star-making (white) masses. He is not going to be a yo-yo with pop clout.

Randy Crawford: Abstract Emotions.


When Cannonball Adderley Tabbed Randy Crawford for a pivotal role in his 1974 musical, Big Man, her fetching soprano made a sizable impact alongside the husky baritone of principal vocalist Joe Williams. But before she could be categorized as a jazz singer, Crawford hit the pop charts with the Crusaders, doing a blistering vocal on the 1979 hit "Street Life." That song not only gave her name recognition for the first time but also "Higher Than Anyone Can Count" feature confident performances, with Crawford's soprano never fading or losing its edge. Sadly, you can't say the same for the musicians. There are big names listed on the jacket, including bassist Anthony Jackson and Lucas himself handling the barage of synthesized equipment, but they don't provide Crawford with much of anything beyond standard electronic bottom and ho-hum accompaniment.

Abstract Emotions isn't a terrible album, but it's not a very good one either. Crawford has too much genuine ability to make keeping LPs that do little except barely keep her in the public eye. In a year when jazz-based pop has proven appealing and successful for the likes of Anita Baker and Sade, it's strange that a singer who started out making that kind of music hasn't decided to return to it.

(continued from page 90)

Sheila Jordan: The Crossing.

Joel Blum

A DARING AND INVENTIVE SINGER, ONE OF THE greatest individualists in jazz, Sheila Jordan has been on the scene since 1962 when she recorded a startling "You Are My Sunshine" with George Russell. In her best work, she exploits the harmonic advances of Charlie Parker without sacrificing the pathos she found in her other early model, Billie Holiday. Jordan has a small, flexible voice, with girtlish highs and dramatic chest tones. Her fast, lyrical vibrato often appears suddenly in the middle of phrases, and in a single take she might move from a sweet whisper to a metallic cry. She is jovial on up-tempo blues, but ballads are her strength. Other singers take a popular song and slap it around, Jordan gets inside it and makes it dance.

The Crossing is one of her most enchanting records, notable for the brilliance and variety of the accompaniment—Jordan has often said she just wants to be a member of the band—and for the autobiographical flavor of the performances. "Sheila's Blues" is directly autobiographical: Accompanied by pianist Kenny Barron, bassist Harvie Swartz, (continued on page 95)
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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 gossipy 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 cliche.

MICHAEL ULLMAN

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 then led a highly touted big band—personal triumphs that are inevitably overshadowed by his intimate 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 the formality of his playing—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 Lionel 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. This is where Holiday then, a virtual unknown, entered 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 talent 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 heat 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.

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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 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.

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.
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