

# Stereo Review

SEPTEMBER 1984 \$1.75

## SPEAKER SPECIAL

EXPERT TIPS  
ON SPEAKER  
PLACEMENT

HOW TO BUY A  
SPEAKER SYSTEM

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BASS WITH A  
SUBWOOFER

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& VIDEO  
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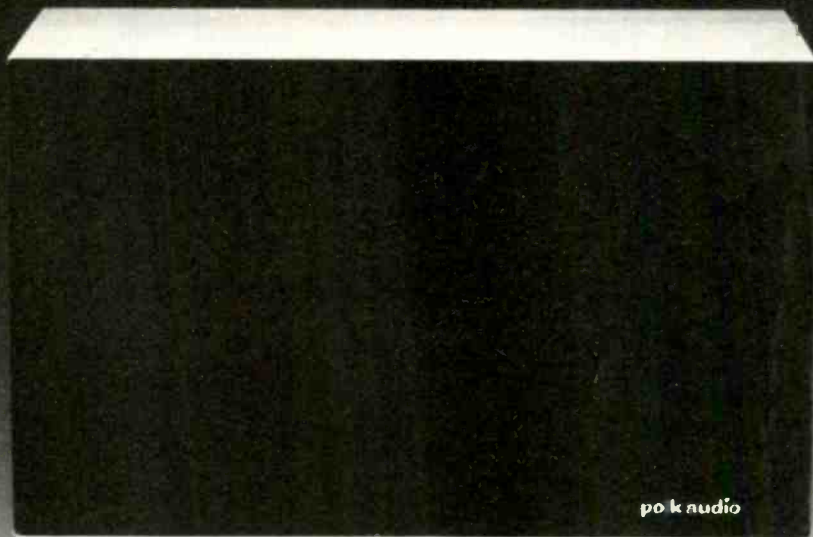
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*High Fidelity Magazine*

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# SR

SEP 1984

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COVER: DESIGN BY SUE LLEWELLYN, PHOTO MICHEL TCHEREVKOFF



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## Stereo Review

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Mission Electronics	x875	AKG	x890

by Christie Barter and Gordon Sell

## BESTSELLER ON VIDEO

"Footloose," this summer's best-selling soundtrack album (on Columbia Records) goes video on Labor Day. The album has spun off two hit singles, Kenny Loggins's rendition of the title song and Deniece Williams's Let's Hear It for the Boy. Paramount Home Video is releasing the complete film on tape over the Labor Day weekend at a suggested list of \$39.95.

## FLOPPY DISC AUDIO

A company called Compusonics claims to have developed a digital audio recorder and player that can store up to an hour of audio on a high-density computer floppy disc. Despite extensive coverage in various hi-fi publications, no one, to our knowledge, has heard the technology convincingly demonstrated. A full report from us will follow such a demonstration.

## TECH NOTES

Radio Shack will be selling hi-fi VCR's and Compact Disc players this fall....Watch for Denon and H.H. Scott to launch car stereo and video products in 1985.... Look for entry-level CD players to retail for less than \$300 in some discount stores by Christmas....Panasonic has developed a credit-card-size AM/FM stereo radio. The bulkiest part is the mini phono jack....Acoustic Research, celebrating its thirtieth anniversary, has introduced the AR30B speaker for the occasion.

Sony has developed a commercial Beta and Beta Hi-Fi video-cassette duplicating machine that can operate at 150 times the speed currently used by duplicators. This should help bring down the price of prerecorded Beta tapes....CBS has decided to follow RCA in abandoning the CED video-disc format.

With the current boom in record sales, the CED facility will be used for pressing vinyl LP's.... General Electric will soon begin selling a Compact Disc player manufactured for them by Toshiba.

CBS and Western Electric have dropped out of the DBS (Direct Broadcast Satellite) business, citing, respectively, doubts about the availability of programming and the risks accompanying the very high investments. COMSAT, RCA, and some others are still developing DBS to provide programming to remote areas and to transmit high-definition video with good (perhaps digital) audio tracks. Japan already has one DBS satellite in orbit beaming to small antennas only 3 feet wide.

## CD MILESTONES

Wagner's Ring has been released on Compact Disc for the first time by the Eurodisc label from East Germany. Conducted by Marek Janowski, this digitally recorded performance of the four-opera cycle takes eighteen CD's. It is available in the U.S. as an import.... The second Ring on CD, due in stores this fall or winter, will be London Records' version conducted by Sir Georg Solti. It was the first Ring ever recorded commercially....Warner Bros. has been a leader in lowering CD prices, but the first company to break the \$15-\$16 price barrier is Sine Qua Non, a small jazz and classical label. It released its first CD's this summer at \$14.98 each.

## GOING GOLD

During the first half of 1984, the Recording Industry Association of America certified sixty-four albums gold, a gain of 36 per cent over the first half of 1983. Platinum album certifications, up one from 1983, totaled twenty-four.



# THE ULTIMATE MACHINE

**JVC'S NEW R-X500B RECEIVER IS A SUPERB EXAMPLE OF HOW FAR JVC WILL GO TO BRING YOU THE ULTIMATE IN SOUND.**

Some hi-fi equipment delivers slightly higher fidelity. Especially when it's designed by JVC®. In fact, JVC's entire line

remote equalization and unheard-of-refinements, it is virtually without equal.

**ADVANTAGE: A POWER AMP WITH INCREDIBLE POWERS**

The R-X500B boasts two of the highest refinements in power amp technology available today—Dynamic Super A and Gm Driver. Dynamic Super A improves

of high fidelity components is known throughout the world for technological brilliance and painstaking craftsmanship.

The R-X500B receiver is a case in point. With the technology of JVC's power amp, equalizer and tuner, plus

performance in two significant ways. One, it renders music reproduction silky and pure by eliminating offensive switching distortion. Two, it capably controls speaker motion by forming an ideal interface between the amplifier and the speaker.

**HIGH FIDELITY**







JVC's newest technology, Gm Driver, improves actual in-use performance at all listening levels, high and low, by driving the power stage at a constant voltage.

**ADVANTAGE: AN EQUALIZER WITH A GRAPHIC DIFFERENCE**

Since 1966, when JVC pioneered equalizers for home use, we have remained in the very forefront of equalizer technology.

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Five equalized responses can be memorized for instant recall at a touch.



And an infrared wireless remote control makes it possible to adjust equalization from your arm-chair without sacrificing sound quality.

In a further refinement, JVC engineers opted for an LSI to handle electronic switching for both channels at

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**ADVANTAGE: A TUNER AS SMART AS A COMPUTER**

The R-X500B puts an advanced microcomputer in charge of the digital synthesizer tuner and references it to the accuracy of a quartz oscillator, making it highly versatile and easy to use. The microcomputer lets you preset 15 AM and 15 FM frequencies, scan them all for 5 seconds each, read out aerial signal strength in 5dB increments, plus much more.

**SPECIFICATIONS**

**AMPLIFIER SECTION**

Output Power  
100 Watts per channel, min. RMS, both channels driven into 8 ohms, from 20Hz to 20kHz, with no more than 0.007% total harmonic distortion.

Signal-to-Noise Ratio ('66IHF/DIN)  
Phono—80dB/66dB  
Video/Aux/DAD/Tape—100dB/67dB

RIAA Phono Equalization  
± 0.5dB (20Hz -20kHz)

**S. E. A. SECTION**

Centre Frequencies—63, 160, 400, 1k, 2.5k, 6.3k, 16kHz  
Control Range—± 10dB

**FM TUNER SECTION ('78 IHF)**

50dB Quieting Sensitivity  
Mono—14.8dBf Stereo—38.3 dBf

Signal to Noise Ratio (IHF-A Weighted)  
Mono/Stereo—82dB/73dB

**ADVANTAGE: JVC**

It is the attention to engineering detail and craftsmanship evident in the R-X500B which separates every JVC hi-fi component from all others. JVC makes changes in design for the sake of improvement. Not just for the sake of change. And the result is the difference between excellent and average. See, and hear, this difference at your nearest JVC dealer.



by William Livingstone



With Magnepan's president Jim Winey

## Audio as Art

**T**HE parallels between audiophilia and collecting art are of considerable interest to me because both activities have absorbed a good deal of my spare time and discretionary income. Lately, as my passion for pictures has threatened to get out of hand, I've sought greater understanding of the subject in a few general works on collecting.

In *The Complete Guide to Collecting Art* (Knopf 1982), Lee Rosenbaum says, "True collecting—as distinguished from decorating, status-seeking, or investing—is a madness; art collecting—with its strong spiritual and aesthetic power—is probably the most passionate form of this mania." I'm not so sure about that, and I wonder if Ms. Rosenbaum would make such a statement if she had ever met any high-end audiophiles.

I recently got some new insight into the mind of the "tweak" from Thomas Gillett, who wrote "The High-End Horizon" in our August issue. He suggests that when an audiophile moves from mainstream hi-fi into the wonderland of the high end, he leaves behind many purely technological concerns. His new world is a realm where audio is an art form that offers him the same

opportunities for self-expression that galleries offer to collectors of painting and sculpture.

The idea intrigues me. Just as art collectors claim a spiritual relationship with the artists whose pictures they buy, audiophiles feel close to Bob Carver (Carver Corp.), Jon Dahlquist (Dahlquist Inc.), Larry Schotz (NAD and Proton), or Jim Winey (Magnepan) through owning their products. When audiophiles discuss these products, they sound much like art collectors talking about the inner life of a painting.

Paul Singer, a psychiatrist quoted in Rosenbaum's book, describes collecting as "a highly erotic act, totally akin to lovemaking." He goes on to say, "Any dealer worth his salt knows there should be no interruption while a collector looks at an object; it is a moment of great intimacy." Dr. Singer collects Chinese art, but I think he would feel quite at home at high-end audio salons where A-B comparisons are not permitted and there are no interruptions in the private listening rooms when a customer is establishing a spiritual relationship with a new amplifier, speaker, turntable, cable, or cartridge.

These things were on my mind when I went to this summer's Consumer Electronics Show in Chicago, and consequently CES looked to me like a gigantic exhibition of contemporary art. My fellow editors and I planned to select the most innovative products unveiled at the show, and I felt like an affluent collector as I made my list. Gordon Sell describes our choices on page 59.

Even if your budget limits you to mid-price, mainstream hi-fi products, choosing equipment that best suits your personal tastes can give you gratifying opportunities for self-expression. In "Speaker City" on page 68 Ian Masters tells how best to express your taste in speakers, and in "Off the Wall!" on page 76 Timothy Holl tells you what to do with new speakers when you've bought them and taken them home. A sharp eye is useful to an art collector, but among the crucial parts of your audio system you should include your listening room and your own ears. □

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Why ceramics? They're rigid and inert, so they provide uncommon stability and resistance to mechanical vibrations from audio feedback. They're non-ferrous, so there are no chassis eddy currents to cause electrical hum.

The handsome ceramic-compound resin base of the DA-910 CD player is actually the

chassis—supporting and housing all components and isolating vibration. Resonance from the cabinetry is almost non-existent.

But Kyocera doesn't stop there. Digital audio's technical requirements demand unprecedented circuit capability so we use fine ceramics throughout to further conquer vibration. For example, all discrete hi tolerance audio components and the 3rd order Bessel analog filters are ceramic encased.

There are other material differences. Instead of an ordinary laminated E frame, we use a solid ferrite cuffless core power transformer to cut eddy currents, minimize flux leakage and improve voltage regulation. And instead of ferrous metals, we use 100% aluminum and zinc chassis construction including a diecast laser head and a precision disc drive mechanism.

#### What else does the DA-910 offer?

- Infrared wireless remote control system.
  - Three separate power supplies to allow complete isolation to critical circuits.
  - Direct coupling (audio stages) for excellent low frequency response.
  - Floating horizontal motorized disc loading to further improve stability and accuracy from external feedback.
  - Separate digital to analog conversion for left and right channels.
  - 176.4 KHz quadruple over-sampling technology.
  - Quality digital and improved analog filtering for superior phase distortion performance.
  - Full feature programmable keyboard entry. Even before Kyocera added ceramics, the DA-910 CD player provided remarkable purity. With ceramics, the results are truly astounding. Put it to the test at a selected Kyocera dealer now.
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# BETTER SOUND BASED ON CERAMICS.

CIRCLE NO. 8 ON READER SERVICE CARD

## Video pro and con

It seems in trying to keep up with the video explosion you have decided to review anything that produces stereo sound. You may not be aware of the fact that there are magazines already out there with names similar to your own that handle the video quite well, maybe better because they don't review LP's.

I just hope Compact Disc players never become standard equipment on major appliances because I'm afraid your magazine will skip over a review of Wagner's Ring Cycle in favor of a critique of Kitchen Aid's "Rinse Cycle."

ROBERT O. WOOD III  
Annapolis, Md.

**LOVE YOUR IDEA STOP SEND FURTHER INFO AT ONCE STOP CAN'T FIND KITCHEN AID OR "RINSE CYCLE" IN SCHWANN CATALOG. ED.**

You are devoting too much space to video reviews, and it seems to cut into the space allowed for your record experts, Steve Simels and Alanna Nash. I read lots of other publications, but I rely on those two people more than any others for advice on what to buy. Please, more space for Steve and Alanna!

CHRIS RAND  
Kingsville, Tex.

According to the "Bulletin" column in your July issue, the CED video disc still lives although RCA has stopped making the players. If the CED hardware licensees intend to keep the format alive, they should let the public know their plans with advertisements to counteract the widespread magazine and newspaper stories on CED's demise. I have been uncertain about whether I would add to my thirteen-disc collection for my four-month-old RCA SJT400. If Hitachi and Toshiba come out publicly saying they'll keep CED alive, I'll buy more discs.

PHIL COHEN  
Bay Harbor, Fla.

Allan Wallace, Hitachi's senior vice president of sales, says, "We will continue to sell the players as long as there is a demand." Toshiba's advertising manager, Richard Meidenbauer, says his company will continue to sell its current inventory of players but does not plan any new models or further orders of existing models. Meanwhile, CBS Records has announced that it will discontinue production of the CED discs.

## Up the high end

If the frequency-response curve published in Julian Hirsch's review of the Mark Levinson ML-3 (June) is typical

(and after all a \$5,000 amp should be repeatable), you have discovered at least one of the reasons why the ML-3 sounds different from its lower-cost competitors. It's because they are flat!

JOHN H. ROBERTS  
President, Phoenix Systems, Inc.  
Manchester, Conn.

Congratulations on what looks like a change for the better in your editorial policy. For a long time I have bought British hi-fi publications because of their assessment of equipment based on sound quality. The major American magazines appear to avoid this type of reviewing in favor of pure technotalk. I hope your June issue marks a turning point. A balanced review including subjective sound appraisal and technical specs is what is needed.

ROBERT GALLAGHER  
Chicago, Ill.

Julian Hirsch states that he couldn't compare the Mark Levinson ML3 to other amplifiers of similar specs because he couldn't hook it up through his comparator for a direct comparison. I suggest that in the future Hirsch compare the sound of an amplifier being tested to real live music and not to another amplifier because in reality both amps are mere shadows of the real thing.

GARY A. CRIGHTON  
Los Angeles, Calif.

STEREO REVIEW is substantially changing its style, content, and attitudes. It looks like throwing caution to the winds in a desirable calculated manner. It must have taken courage to start courting the high end. I like it so far, but I expect you not to sound like the underground press in a negative way.

CARLOS E. BAUZA  
San Juan, Puerto Rico

## That turntable!

On page 23 of your June issue is a picture of a turntable that can't work, or if it does, it will play records backwards. The photograph is flopped, I know, but surely it shouldn't have been.

W. HAGOOD  
Town Creek, Ala.

In June you reviewed the Dual CS 515 turntable, but you failed to mention that the CS 515 also featured a revolutionary new "Head-On" tracking system. You also didn't mention how the record shavings were disposed of by the turntable. Maybe suction from the edge of the platter or possibly an air line built into the tone arm.

MALCOLM S. HIGA  
Waimea, Hawaii



**"If you're into monitoring satanic messages recorded backwards by certain rock groups, this left-handed turntable is right up your alley, sir."**

# Speaker Tweaker from TDK



You bought a high-powered, quality audio system with speakers to match for only one purpose. Total performance. To maximize its potential, you need the ultimate high-bias audio cassette. TDK SA-X.

It's one of our Pro Reference cassettes designed to deliver unmatched performance.

Surpassing all other conventional cassettes in its class, SA-X delivers a level of sound quality, clarity and fidelity that you have never obtained before. Unless, of course, you're already using it.

SA-X's exclusive dual coating of Super Avilyn magnetic particles pro-

vides optimum performance at all frequency ranges. You get crisp, clean highs and rich, solid lows. With pure sonic pleasure in between.

SA-X will also handle high signal levels without distortion or saturation, thanks to its super-wide dynamic range and higher MOL.

And we make sure SA-X keeps on tweaking without squeaking (as some other cassettes do). Our specially-engineered Laboratory Standard Mechanism provides a smoother tape transport to assure total reliability and trouble-free performance.

It should also come as no surprise that you'll get incredible perform-

ances from two other TDK Pro Reference cassettes: MA-R metal and AD-X Avilyn-based normal bias cassettes.

Each is designed to deliver pure performance pleasure and long-time reliability...each backed by our Lifetime Warranty.

So maximize the performance of your equipment. Pick up TDK Pro Reference audio cassettes today. We've never met a speaker we couldn't tweak!

 **TDK**  
THE MACHINE FOR YOUR MACHINE.  
CIRCLE NO. 48 ON READER SERVICE CARD

It is apparent from the picture of the CS 515 turntable that either Dual has designed a Leading Edge tone arm/cartridge or this turntable is designed to play records backwards from the middle to the outside of the disc. Will it play old Beatles albums in reverse?

G. B. TIMBERLAKE  
Dayton, Ohio

Ever since my \$39 Columbia hand-started LP player collapsed of misuse, I've searched for a left-handed turntable to hear trumpets sounded by inhalation.

It's too easy with tape. Don't spoil it all by explaining that the compositor reversed the photo, please.

CURTIS MICHEL  
New York, N.Y.

*We are delighted to know so many readers scrutinize our product photos with such sharp eyes. Despite the amount of reader mail on the subject, Dual has declined to market a left-handed turntable, but cartoonist Charles Rodrigues tells us that he is giving serious thought to the subject.*

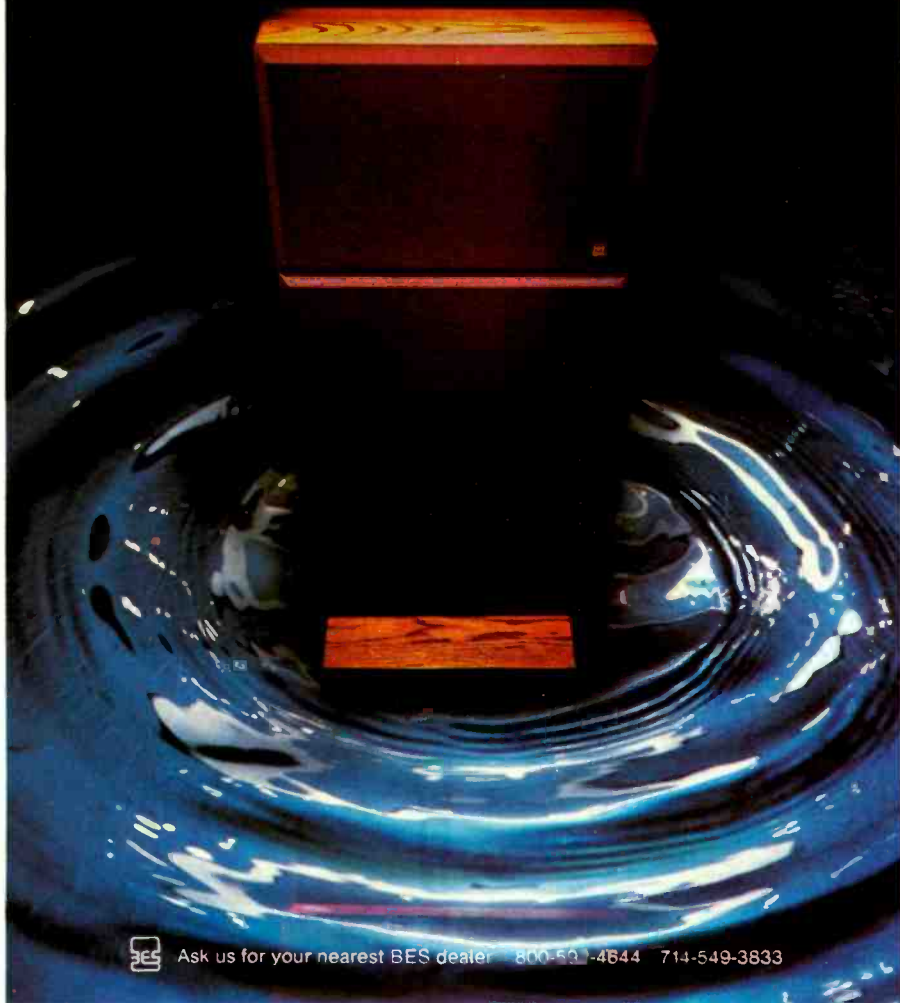
## BES speakers. Music in the Round.

The natural sound no other speaker can recreate.

Now there's a speaker that produces sound the way nature produces sound: In 360° waves. Front and back and in all planes. Place them anywhere and free yourself from the tyranny of narrowly-beamed box speakers.

The reviewers raved: "Open," "Clean" and "Elegant."

What are your superlatives?



Ask us for your nearest BES dealer 800-592-4644 714-549-3833

CIRCLE NO. 16 ON READER SERVICE CARD

## Storing CD's

One evening while trying to figure out what to do about my growing stack of Compact Discs, I happened to glance over at the small plastic roll-top case in which I store 5¼-inch floppy disks for my personal computer. Apparently Mr. Murphy was out to lunch, for when I inserted a CD box into the floppy case, it was an almost perfect fit!

A CD box is about as thick as five floppies, so a case that stores a hundred floppies will store about twenty CD's. The cases come in many different shapes and formats, including ones where the lid flips open to show the floppies/CD's and some with drawers that slide out much like a miniature filing cabinet. (Avoid the types that have nonremovable dividers.) They can be purchased from computer-accessory stores and also some computer stores.

WILLIAM M. CAMPBELL  
Kansas City, Mo.

*Sounds like a good idea, but wooden storage racks specifically designed for Compact Discs are available from Imperial Plastics (Airlake Industrial Park, P.O. Box 246, Lakeville, Minn. 55044) and Sonrise (13622 NE 20th, Suite F, Bellevue, Wash. 98005). And a plastic Discbox is available from International Book & Record Distributors (40-11 24th St., Long Island City, N.Y. 11101).*

## Form and content

I find your new format to be a step backwards as far as ease of reading and visually solid layouts are concerned. The print is too bold to be read easily. It does not promote a feeling of fluidity, power, or speed. It seems to catch my eyes and STOP them at each word. It does not make me want to read on.

DAVID EILERS  
St. Paul, Minn.

Congratulations on your fine "Music for Yuppies" (June). Rarely has an article been so perfect in its combination of entertainment value and true, valid information.

ROGER C. PARKER  
Hampton, N.H.

We would both like to thank you for the flattering and clever article on Yuppie listening habits. It was right on target, and everyone seems to have read it. STEREO REVIEW seems to be mandatory Yuppie reading.

MARISSA PIESMAN  
MARILEE HARTLEY  
New York, N.Y.

*Writers Piesman and Hartley are the authors of that authoritative reference work The Yuppie Handbook.*

Your new approach to regular sections of the magazine has brought real improvements that make it more enjoyable. For example, the captions of

Sansui has developed an amazing new receiver; we call it the S-X1050. You'll call it incredible. That's because no other 35 watt\* stereo receiver can match the Sansui S-X1050 for great sound, beauty and value.

Achieving more than any other receiver in its range, the S-X1050 incorporates a 5-band graphic equalizer. It's a built-in exclusive for a receiver at this level, that gives you complete tonal versatility for tailoring sound and attaining flat frequency response.

The Sansui S-X1050 also features Quartz PLL synthesizer tuning that assures you of drift-free reception. Clean bass response is provided by our DC servo circuitry, and our 5-LED power display lets you see what's happening—even in daylight.

We put all this overachievement under easy control with velvet-touch slides, tabs and push-buttons, to make the S-X1050 as pleasurable to operate as it is to listen to. For instance, simul-switching lets you go instantly from one source to another at the

touch of a tab. And when you want to lock in your favorite music stations, you can at the touch of a button with 12 presets (6FM, 6AM).

All this, plus playing two pairs of speakers simultaneously, slide volume control and a 2-deck connection for tape 1 to 2 dubbing make the S-X1050 a most incredible unit.

So achieve a new level of sound quality, convenience and value with Sansui's S-X1050. We know you'll be overwhelmed. SANSUI ELECTRONICS CORPORATION, Lyndhurst, NJ 07071; Carson, CA 90746, Sansui Electric Co., Ltd., Tokyo, Japan



Our S-X1030 25 watt\* receiver is another Sansui achiever with many of the great features of our S-X1050 unit.

# OVERACHIEVER.



*Putting More Pleasure in Sound.*



\*S-X1050—35 watts, 0.02% THD; S-X1030—25 watts, 0.05% THD. Minimum-RMS, both channels driven into 8 ohms, from 20-20 kHz.

equipment test reports as well as the changes in the "Bulletin" and "Record Makers" and the variety of illustrations throughout the issue are most welcome changes for the better.

Also, the broad thematic scope of the articles included in the June issue, such as comments on high-end equipment, and the novelty of "Systems" make us expect good reading in many months to come—not to mention "Music for Yuppies," which is really great.

FÉLIX DANIEL TORRES  
San Juan, Puerto Rico

STEREO REVIEW has always presented subjects in a clean, intelligent manner, and I have always held great respect for this quality. It appears that this quality has now been sacrificed to increase circulation and to reach the intelligence level of those you call "yuppies."

After reading the last issue of your magazine I had to check the cover to make sure that it wasn't actually the latest issue of *Vogue*. Maybe I am resistant to change, but fashion has no place, or should have no place, in audio equipment or music.

CRAIG ANDERSON  
Lafayette, Calif.

Thanks for your July "Systems," another example of conspicuous consumption to inspire the huddled yearning masses. They love to see what results when one of them is permitted to

indulge his beer taste with a champagne budget. Money Green, eh? A style called Nouveau Riche Tawdry, fit for the finest condo in Malibu!

I can do without the monthly display of stereo-system-as-costume-jewelry by moneyed profilers, complete with price brags. How about using that space for some useful information?

GREG BURNHAM  
Davenport, Calif.

About the "new look" of your magazine: It stinks.

EDWARD ESPOSITO  
Brooklyn, N.Y.

Your May issue was fine. Then came June. What happened? You lampoon the Yuppies but transform the entire magazine for Yuppie tastes.

BARRETT A. EISENSTAT  
Hartsdale, N.Y.

*We decided to try to have it both ways.*

## East still East

Editor Livingstone will be surprised, and perhaps pleased, to find out that one of the childhood geography lessons mentioned in his July editorial still holds true: some 65 per cent of the American population *still* lives east of the Mississippi. Mr. Livingstone's misunderstanding of the census figures no

doubt stems from the fact that the U.S. "center of population" (now located in eastern Missouri) is defined as a kind of "center of gravity" and not a simple geographic quartering of total population. Although the first and third largest states in population (California and Texas) are west of the Mississippi, number two and numbers four through fifteen are east of it.

CHARLES H. SMITH  
Department of Geography  
University of Illinois  
Urbana, Ill.

## Errata

Your July listing of the concert video "Gimme Shelter" suggests that it is available in stereo only on video disc. This is not the case. All copies of the RCA/Columbia Pictures release of "Gimme Shelter" are produced in either Beta Hi-Fi stereo or VHS stereo with Dolby B noise reduction.

ROSEMARY BRUMMAGE  
RCA/Columbia Pictures Home Video  
Burbank, Calif.

The July review of the RCA VHS Hi-Fi video cassette recorder contained an error in the address for RCA. For additional information on the RCA VKT-550 write to RCA, Dept. SR, 600 North Sherman Drive, Indianapolis, Ind. 46201.

# ANY WAY YOU PLAY IT.



Compact Discs, audio or video tapes, records or AM/FM stereo reception, any way you play it you'll hear it better with AKG headphones.

Used by professional audio engineers around the world as recording studio monitors, AKG headphones help to "fine tune" the recordings that you listen to.

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... And for the finest stereo phono cartridges, ask your dealer about the AKG Transversal Suspension System.

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# Music just met its Master.



Home audio from Proton, the "Best Picture" video people. Pure black, purely superb home audio components that deliver a richness in performance unequalled in audio today.

Performance is Proton-engineered into these separates with features like the exclusive Schotz Tuner/Noise Reduction System in the digital Proton 440 Stereo FM/AM Tuner.

The Proton 520 Integrated Amplifier also features High Current capability, Video Select, and Dual Phono Preamps for both moving coil and moving magnet cartridges. The Proton 720 Stereo Cassette Deck offers both Dolby<sup>®</sup> B and Dolby<sup>®</sup> C Noise Reduction Systems and Metal/Normal/CrO<sub>2</sub> tape capabilities.

Proton Audio components reproduce the full spectrum of music with great beauty and depth, perfectly matching Proton Video components in styling, size and performance. They're definitely in a class of their own.

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*Audio*

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# PERHAPS THE ONLY PIECE OF HOME ENTERTAINMENT EQUIPMENT THAT CAN'T BE CONTROLLED BY THE SX-V90 RECEIVER.

One look at the diagram to the right should convince you that the SX-V90 audio receiver isn't merely an audio receiver.

In fact, it might just be the most revolutionary piece of equipment in the entire home entertainment revolution.

Because it serves as a control center for more pieces of audio and video equipment than any other competitive product of its type.

Through the SX-V90, you can channel two VCRs (of any format), one TV monitor, one regular TV, one video disc, one compact disc, two cassette decks, two turntables, and one video game or one computer.

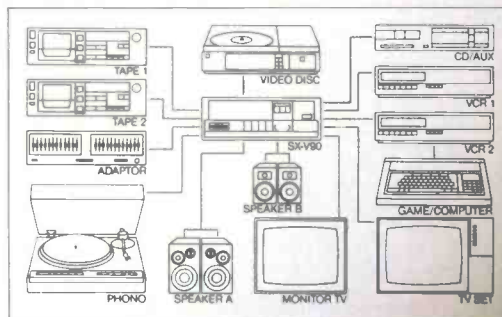
But not only does the SX-V90 have the best connections in the business, it also has ingenuity. Because as well as reproducing video sourced signals (such as MTV), it creates simulated-stereo imaging from any mono signal (such as regular TV).

In short, it turns your television into a stereo. As for the quality of the stereo, with its advanced DDD tuner technology, and 125 watts of power

per channel minimum (at 8 ohms, from 20-20,000 Hz with no more than 0.005% THD), the SX-V90 ranks at the top of audio receivers.

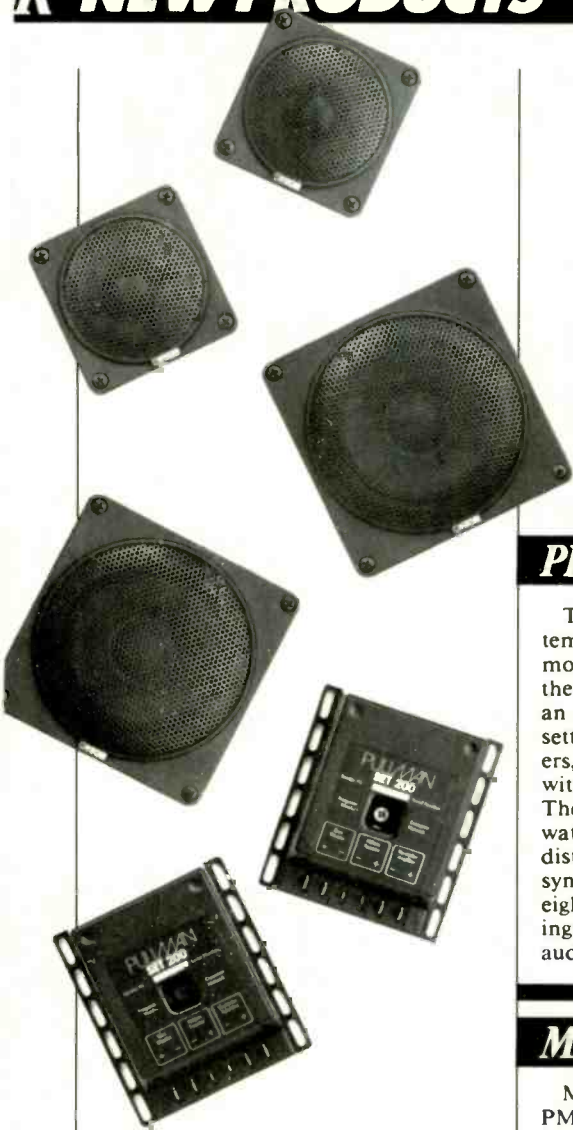
Which is a very important point.

Because there's no sense in investing in a control center, only to have it sound like it has a built-in popcorn popper.



**PIONEER**  
Because the music matters.

# NEW PRODUCTS

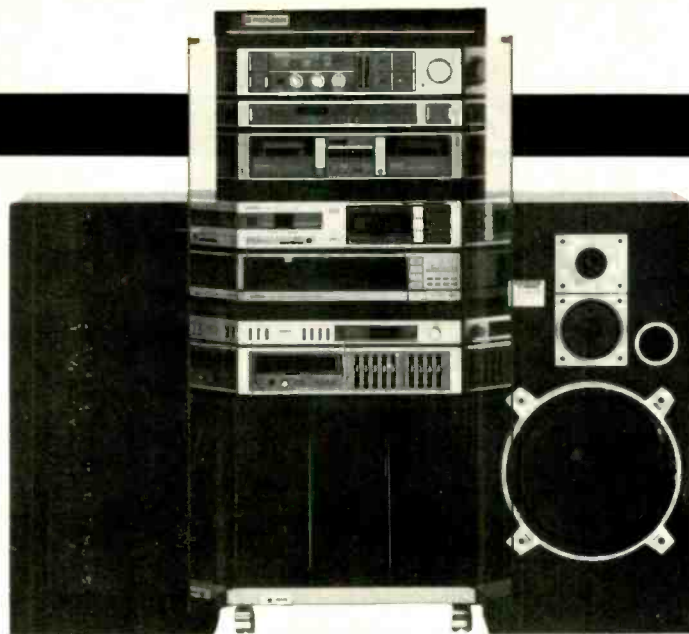


## CANTON

Pullman flush-mounting car speakers from Canton are available in two different configurations. The Pullman Set 200 consists of one woofer and one dome tweeter for each channel, complete with crossover network. The Set 300 adds an extra woofer to each channel. Hardware for door or rear-deck mounting is included, and the tweeters may be installed in the dash if desired.

System impedance for both sets is 4 ohms. Nominal/music power-handling rating for the Set 200 is 40/70 watts. For the Set 300, the rating is 60/100 watts. The woofer enclosures in each system measure 4<sup>1</sup>/<sub>16</sub> inches square and 1<sup>1</sup>/<sub>16</sub> inches deep. The tweeter enclosures are 3<sup>1</sup>/<sub>4</sub> inches square and 3/4 inch deep. The finish is black. Prices: Set 200, \$275; Set 300, \$375. Canton North America, Dept. SR, 254 First Ave. North, Minneapolis, Minn. 55401.

Circle 120 on reader service card



## PIONEER

The Syscom A9800 component system from Pioneer heads the list of nine models in the Syscom line. Included in the A9800 are a Compact Disc player, an integrated amplifier, a tuner, a cassette deck, a turntable, a pair of speakers, an equalizer, and an audio rack with glass doors and rosewood finish. The SA-1050 amplifier provides 100 watts per channel into 8 ohms with low distortion. The TX-950 quartz digital-synthesis tuner features eight AM and eight FM station presets and search tuning. Track search, time/index search, audible scan, and fluorescent track and

time display are included in the P-D70 Compact Disc player.

The CT-1050W double cassette deck has Dolby B and Dolby C noise reduction, pitch control, program search, and record mute. The programmable direct-drive PL-88FS turntable is quartz-locked. It comes with a moving-coil cartridge, and the platter is mounted on a roll-out drawer. The three-way CS-B9000 speakers house a 12-inch woofer, 5-inch midrange, and 2<sup>3</sup>/<sub>8</sub>-inch tweeter. The SG-750 ten-band equalizer has a built-in pink-noise generator. Price for the A9800 system is \$2,699.95. Pioneer Electronics, Dept. SR, 5000 Airport Plaza Drive, Long Beach, Calif. 90815.

Circle 121 on reader service card

## MARANTZ

Marantz's portable, AC/DC-powered PMD 430 cassette deck has Dolby B and dbx noise-reduction systems. The three-head deck allows direct comparison of the recorded signal with the source while recording in the field. It also comes with fine bias control, auto replay illuminated VU meters, and pitch control. There are two microphone inputs and a headphone jack for convenient live recording. The deck weighs only 3<sup>1</sup>/<sub>2</sub> pounds and measures 2 inches x 9 inches x 6<sup>9</sup>/<sub>10</sub> inches. Price: \$495. A rechargeable NiCad battery pack is \$49.95. Marantz, Dept. SR, 20525 Nordhoff St., Chatsworth, Calif. 91311.

Circle 122 on reader service card



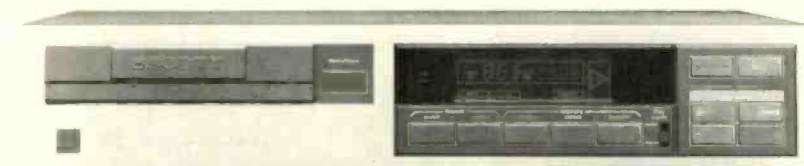
## JENSEN

All five car radio/cassette decks in Jensen's new RE line have PLL digital-synthesis tuning and a back-lit liquid-crystal display that shows the time of day, station frequency, and station preset number or indicates tape play. The 10-watt units have six AM and six FM station presets (with bidirectional scan), auto local/distant switching, and balance and fader controls.

The tape sections of all five models feature permalloy heads, illuminated tape slot, and locking fast forward and rewind. The high-end models add auto-reverse, tape EQ, and loudness compensation. The top-of-the-line RE980 (shown) also has DNR noise reduction and automatic tape search. Prices range from \$199.95 to \$299.95. Jensen Car Audio, Dept. SR, 4136 N. United Parkway, Schiller Park, Ill. 60176.

Circle 123 on reader service card

# SR NEW PRODUCTS



## H.H. SCOTT

The first Compact Disc player from H.H. Scott, the 939DA, utilizes a three-beam laser, LSI technology, and digital filtering. The program remains audible, though muted, during both standard and superfast music search. Up to twen-

ty-three selections can be programmed for playback in sequential order. The front-panel display shows elapsed time, remaining time, selection number, and details of programmed selections. Price: \$600. H.H. Scott, Inc., Dept. SR, 20 Commerce Way, Woburn, Mass. 01888.

Circle 124 on reader service card



## NITTY GRITTY

The Pro model is the top of the line of Nitty Gritty's six record-cleaning systems. With its 1/2-horsepower vacuum motor, the machine can simultaneously wash and vacuum dry both sides of an LP, which it scrubs and dries with "fiber-lined double hemicylindrical lips." The synthetic fibers are said to be small enough for dozens of them to scrub every groove. The cleaning liquid included with the Nitty Gritty unit contains a degreaser, a static neutralizer, a mild detergent, a surfactant, and an algicide. Price of the Nitty Gritty Pro: \$639. Other models start at \$239. Nitty Gritty, Dept. SR, 4650 Arrow Highway, F-4, Montclair, Calif. 91763.

Circle 125 on reader service card

## KYOCERA

The massive base of the Kyocera A-710 integrated amplifier is made of a ceramic compound resin that is said to reduce microphonic (feedback) distortion. The power-amplifier stages use a DC configuration, and the input and driver stages use high-impedance MOS-FET transistors. The phono-cartridge selector has three settings for MM cartridges and three for MC cartridges.

The A-710 is rated at 100 watts per channel into 8 ohms with 0.02 per cent total harmonic distortion or 140 watts into 4 ohms with 0.04 per cent THD. Price: \$800. Kyocera International, Dept. SR, 7 Powder Horn Drive, P.O. Box 4227, Warren, N.J. 07060.

Circle 126 on reader service card



## SPARKOMATIC

Sparkomatic's top-of-the-line car cassette receiver is the SR 315, an in-dash model. The unit has autoreverse and full-logic tape transport. The tape section features Dolby B, Dolby C, and DNR noise-reduction systems. Scan, repeat, blank skip, locking fast forward and rewind, and metal/chrome tape EQ are included.

The tuner section has auto seek and scan, phase-locked-loop electronic tuning, and five AM and five FM station presets. The SR 315 is rated to deliver 40 watts per channel at 1 per cent total harmonic distortion. Frequency response is given as 20 to 20,000 Hz. Sensitivity is 1.5  $\mu$ V for a 30-dB signal-to-noise ratio. A loudness control and a built-in boost for low frequencies at 100, 200, and 300 Hz allow modification of the tonal balance. The unit measures 7 inches wide, 1 7/8 inches high, and 5 1/4 inches deep. Price: \$349.95. Sparkomatic Corp., Dept. SR, Milford, Pa. 18337.

Circle 129 on reader service card

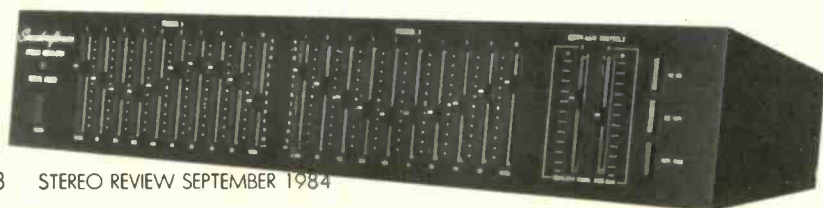
## SOUNDCRAFTSMEN

Soundcraftsmen's SE550 graphic equalizer divides the audio signal into ten octave bands for each channel. Sliders boost or attenuate each band by as much as 15 dB. Unity-gain controls add an extra 18-dB range of adjustment. Bands are centered at 32, 64, 125, 250, 500, 1,000, 2,000, 4,000, 8,000, and 16,000 Hz. Controls for tape monitor,

tape equalization, and EQ bypass are located on the front panel. A test LP with Fletcher-Munson pink-noise bands is included with the unit.

Both harmonic and intermodulation distortion are given as less than 0.01 per cent at 1 volt. The SE550 measures 17 inches wide, 3 1/2 inches high, and 9 inches deep. It weighs 9 pounds. Price: \$189. Soundcraftsmen, Dept. SR, 2200 So. Richey, Santa Ana, Calif. 92705.

Circle 127 on reader service card



# AUDIOPHILE FILE™ XL-S

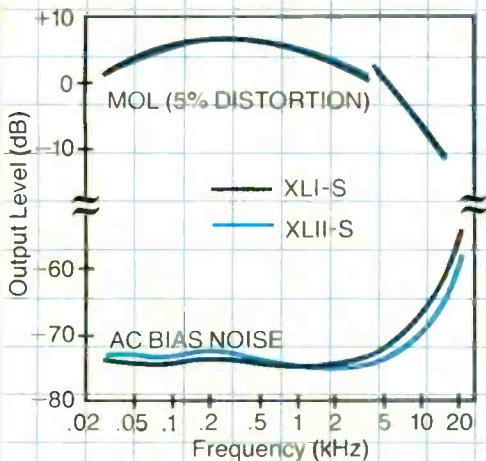
## COMPACT DISC COMPATIBLE

Maxell introduces the new XL-S audio cassettes; a series of ferric oxide tapes which deliver a level of performance that can capture the sound nuances found on Compact Discs more faithfully than other ferric oxide cassettes on the market.

There are a number of areas where this achievement is apparent.

### GREATER DYNAMIC RANGE.

Through a new formulation of our magnetic particles, we were able to reduce the perceived residual AC bias noise level by 1 dB in the critical 2 kHz to 10 kHz mid-frequency range. And simultaneously increase sensitivity and maximum output levels by as much as 2 dB.

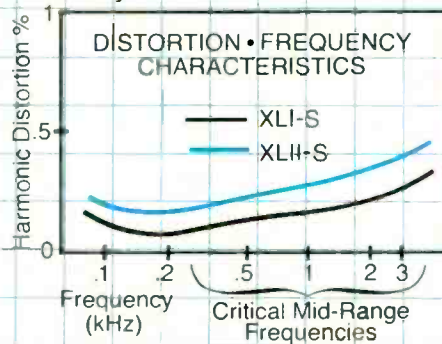


As a result, the dynamic range of each tape has been significantly expanded. So you get a

better signal to noise ratio and a fuller impact of the dynamic transients exclusively inherent to digital CD recordings.

### LOWER DISTORTION.

The newly formulated particles also contribute considerably to XL-S's low output fluctuation, as well as its virtual distortion-free reproduction, especially in the critical mid-range frequencies. This, in turn, accounts for our XL-S tape's enhanced sound clarity.



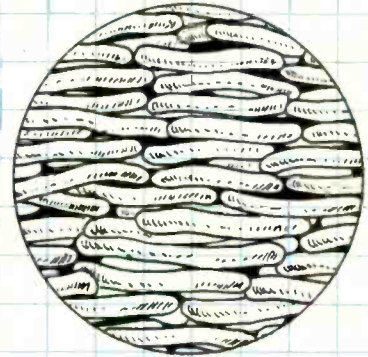
### IMPROVED MAGNETIC PARTICLES.

Our refined particle crystallization process is the basis for all of these accomplishments. Maxell engineers are now able to produce a more compact needle-shaped Epitaxial magnetic particle of extremely high uniformity.

This allows us to create a greater ratio of total surface area to unit weight of magnetic particles.

As a result, our XL-S

tapes now have the ability to record more information per unit area than ever before.



PACKING DENSITY OF UNIFORM PARTICLES.

Which is why Maxell high bias XLII-S and normal bias XLI-S are unsurpassed at reproducing the sound qualities found on today's finest recordings. Regardless of whether your frame of reference is analog or digital audio discs.

For technical specifications on the XL-S series, write to: Audiophile File, Maxell Corp. of America, 60 Oxford Drive, Moonachie, New Jersey 07074.



## IT'S WORTH IT.

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# DALI DALI DALI

## NEW from DALI: High Quality European Speaker System...and an Opportunity to Make Money in Your Spare Time!

Denon, NAD, Micro Seiki, DALI... these are just a few of the well-known brands we have been successfully marketing in Europe for several years. Now Danish American Ltd., Inc. (DALI) offers our well-proven direct to consumer marketing concept to you.

We sell factory direct, offering high-quality, European-manufactured, real-wood walnut-veneer speaker systems at prices you simply will not believe. Yet, DALI does not compromise on quality. These systems use the same superb drivers found in other brand name speakers selling for \$250 and more!

How can DALI charge so little for so much quality? Because we design, manufacture, import, and sell *only* through our own organization. We eliminate the 30% importer/distributor markup, the 7% to 10% sales-representative commission, and the 70% to 120% retailer profit markup. We replaced all of that with a single profit of only 30%!

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Valencia, CA 91355

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CIRCLE NO. 70 ON READER SERVICE CARD

## AUDIO Q. & A. By Larry Klein

### OBSOLETE TECHNOLOGY

**Q** I know that transistors and IC's are more efficient and reliable than vacuum tubes, but how about their high-fidelity performance?

JAMES BEAD  
Trenton, N.J.

**A** It seems to me that the oft-cited system ideal of a straight wire with gain is completely wrong—what we need for accurate music reproduction is total elimination of *all* the distorting electronic elements including wires. Consider that many turn-of-the-century phonograph ads included testimonials claiming that listeners found it impossible to differentiate between the reproduction from pure acoustic cylinders or discs and a live performance. Obviously, then, perfect reproduction was achieved originally, but over the years some sort of mechanical deterioration has occurred in the acoustic players (or records) to cause them to sound as hollow and tinny as they do now. Is anyone out there investigating the source of the problem?

Seriously, though, tube *circuits* (not just tubes) have certain electrical characteristics that differ from those of solid-state designs which can affect the audio signal. The effects can (but don't always) include phase shifts, minor frequency-response aberrations, instability, hum and hiss, and very low damping factor. In a given system and room, an amplifier with one or more of these effects might be sonically preferred by some listeners to an amplifier—tube or transistor—that doesn't have them.

One much-touted virtue of tube amplifiers is that they "clip softly," meaning that when they are overloaded they do not generate large amounts of audibly disagreeable high-order odd-harmonic distortions. Solid-state circuits can also be designed for soft clipping, but anyone troubled with consistent overload clipping, hard or soft, should consider upgrading to a higher-power amplifier.

I don't mean to imply that tube equipment can't sound good—or that solid-state equipment can't sound bad. What I'm saying is that while I know of no inherent sonic advantage in tubes, I do know that their internal characteristics shift with use; deterioration starts from the moment they are first turned on. In short, they wear out. Solid-state devices don't wear out—when they fail, they go suddenly—and can sound as good as tubes ever did.

Of course, everyone is entitled to his own taste, but I don't see why vacuum-tube aficionados are so fascinated by an

almost obsolete technology when by refocusing their energies on *truly* obsolete acoustic players they can really get back to the nitty gritty!

### CD INPUT

**Q** Having just bought a super-duper digital, high-tech, quartz-locked, etc., receiver that has only one turntable input, I hope that a pair of Y connectors will make it possible for me to plug in a new Compact Disc player. My intention is to use it alternately with my regular turntable, depending on which one I happen to switch on at any given time. If that won't work, what is the solution?

DANIEL G. CLARK  
Dumont, N.J.

**A** It wouldn't work—and the solution has already been provided by the Compact Disc player manufacturers. All CD players have "high-level" outputs, meaning that they are designed to be plugged into the same type of input that a tuner or a tape deck would feed. The inputs labeled AUX on your receiver will serve a CD player. If the AUX inputs are not available, one of the receiver's tape input jacks will do.

Incidentally, it is usually *not* a good idea to feed two separate audio devices into one input; they tend to see each other's output circuits as part of the input load, and distortion may rise.

### CHANNEL LOSS

**Q** When I play records, I find that Channel B has almost no sound while Channel A comes through fine. Sometimes there is a low hum that disappears when I tighten the plug on the back of the preamp, but the volume loss is still there. After about an hour of play, the sound on Channel B suddenly returns. All connections seem to be tight, and the sound is normal when I play the tuner or tape deck. How can I correct this problem?

HELEN COMMODORE  
Brooklyn, N.Y.

**A** Intermittent conditions are sometimes so mysterious that they seem to require the services of an exorcist rather than a technician. Consider yourself lucky that your channel-loss problem is consistent and somewhat localized.

Since you have traced the difficulty to the record-player section, the task is to determine whether it's occurring in the player itself or in the phono-preamplifier circuits. As a first diagnostic step, interchange the two leads that plug into the preamp's phono-input jacks. If the loss switches from Channel B to Chan-



## Automatic Audiophile Plus

*Here's Sharp's top of the line, Linear Tracking, totally automated turntable. It plays both sides, repeats and seeks out your songs. Plus, it plays them in any order you desire. And, it's at our close-out price, plus just \$10.*

It was a disaster. Last year DAK closed out Sharp's Linear Tracking Vertical turntable under their Optonica name for just \$173.50 each. We had just 1200, but we received orders for thousands.

Sharp's new Linear Tracking turntable has all the capabilities of the original. Plus, it can play up to 14 selected cuts from both sides of your records automatically in any order you desire. Wow, how great for making recordings!

DAK has made a special massive cash purchase that enables us to offer this all new turntable for just \$10 more than our close-out price for the previous unit.

### GREAT SOUND PLUS

Before we explore the 20-20,000hz audiophile sound produced by its twin linear tracking tone arms complete with Audio-Technica cartridges, let's look at what the micro computer technology of this turntable can do for your music.

But, don't forget that linear tracking arms mean precise lateral balance and accurate tracking from the outside of the record all the way to the center groove for dramatically clean distortion free sound.

### PLAY BOTH SIDES AUTOMATICALLY

Now you can play Side A, Side B, both sides or up to 14 selected cuts over and over again. Now you can have an evening of nonstop music from a single record.

And, think about the wonderful cassettes you'll make with just the songs you want recorded in the order you choose.

This Linear Tracking Turntable has two tone arms and two Audio-Technica cartridges. So, there's a separate linear arm and a separate cartridge for each side of your record.

The main drive is a superb FG electronically controlled DC motor for stability. There are two additional motors. One for

the tone arms of this automatic turntable, and another that automatically glides the turntable drawer in and out when you touch the loading button.



### TOTAL CONTROL

Push the play button and choose side A or B, and an arm moves out to the record. An infrared computer tracking sensor locates the first groove and the stylus will be gently lowered to your record.

There's more. In addition to the automatic track selection, Sharp's top of the line Linear Tracking Turntable has APSS.

APSS uses an infrared sensing system to let you locate specific songs on both sides of your records.

You can move forward to skip songs or move back to play songs again. If you want to hear the song you're listening to over again, just push Reverse APSS.

If you don't like the current song, push Forward APSS and you'll skip forward as many songs as you like.

Now you're in full control and you'll never scratch a record because the on-board computer controls all the actual arm movements. APSS gives you the same control manually that you'd get if you preprogrammed the tracks you desire.

### MUCH MORE

Push one button and the turntable will switch from side A to B, or from B to A. Push the Load button, and the arm will lift from the record, return to its home position and the turntable will glide out.

You can play both 33 1/3 LPs and 45s. And, you can play 7", 10" and 12" records. In addition to all the automated features, there's a cue/pause control as well.

The Turntable is striking. The LED display shows both the tracks that are programmed to play as well as which track and which side is currently being played.

It's about the size of a cassette deck and fits perfectly into any component location. It is 13" wide, 13 3/4" deep and 4 1/2" tall. It's backed by Sharp's standard one year limited warranty.

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Wait till you hear the sound. Wait till you try its computer. And wait till you see this turntable in your system.

If you're not 100% delighted, simply return it in its original box within 30 days for a courteous refund.

To order your top of the line Sharp Linear Tracking, Computer Controlled, Both Sides Playing, Programmable Turntable risk free with your credit card, call toll free or send your check for just \$10 more than our close-out price. Send just **\$183.50 (\$7 P&H)** Order Number 9805.

Your records will love the linear tracking arms, your ears will love the pure sound, you'll love the convenient computer controls and your eyes will love the Hi-Tec looks.



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The professionals at Toshiba. With their incredible System 55.

And what a system. It includes an integrated amplifier with 85 watts per channel\*, a direct drive turntable, a digital synthesized tuner, a full auto-reverse cassette deck, a set of 3-way speakers, plus the options of a compact disc player and a 20-band graphic equalizer. All enclosed in an elegant cabinet with glass door and top.

Toshiba's System 55. It's one of the soundest investments you'll ever make.

\*35 watts per channel, minimum RMS power into 8 ohms from 20 to 20,000 Hz with no more than 0.05% THD.

In Touch with Tomorrow

## TOSHIBA

Toshiba America, Inc., 22 Totowa Road, Wayne, NJ 07470



CIRCLE NO. 57 ON READER SERVICE CARD

## AUDIO Q. & A.

nel A, your preamp is okay and the problem is in the record player or its leads. If the loss remains in Channel B, your preamp needs servicing. Check with its manufacturer to determine how to get that done.

Your record player, depending on its design, has several potential problem spots. The easiest ones for you to check are the leads and the phono cartridge and its mounting shell. The simplest way to check the player leads is to wiggle them vigorously while a record is playing—first at the preamp, then at the record-player end. If the volume loss occurs, the leads are at fault and should be repaired or replaced.

Unplug the cartridge shell and examine the four thin wires and clips that connect to the color-coded pins coming out of the cartridge. Make sure everything is tight and secure. It's a good idea to polish any visible contact points with a pencil eraser.

To check the cartridge itself, interchange the two "hot" leads (usually red and green) going to the cartridge pins labeled R and L. If the defect switches to Channel A, one channel of the cartridge is at fault. If the defect remains in Channel B, the problem is somewhere between the cartridge pin clips and the record player's output leads. If you can't pinpoint the fault, then professional servicing is in order.

Return a suspect defective cartridge to the manufacturer—you may be entitled to a no-charge replacement.

### PAINFUL HIGHS

**Q** I really like high-frequency response, but whenever I turn up the treble my speakers hurt my ears. When a singer sings an "s," it goes right through my head and I can't hear for the next half-hour. Is there any way I can adjust my EQ, or can I buy a new tweeter that won't hurt my ears?

ERIC SEETON  
West Brookfield, Mass.

**A** Located in New York, I'm hard pressed to know exactly what you are hearing in West Brookfield, but it's clear that your taste for highs far exceeds the ability of your equipment to deliver them cleanly. It's possible that your record player is mistracking, your tapes are overloading, your amplifier is being overdriven, and/or your tweeters are at fault, but you need a knowledgeable diagnostic ear at the scene of the sonic crime to pinpoint the problem.

Incidentally, if you really "can't hear for the next half-hour," I would advise you to cut back on whatever you are doing—you are risking permanent hearing loss of the offending band of frequencies.



**\$89 CLOSE-OUT**



**Make your stereo system's sound explode with life. Improve the sound quality by 30 to 50%. Plus, you'll add tape dubbing too with this limited BSR \$89 close-out.**

It's like night and day. Crashing cymbals, the depth of a string bass, more trumpets or more voice will come bursting forth from your stereo at your command.

You'll make your music so vibrant that it will virtually knock your socks off when you use this professional quality 10 band stereo Sound Detonator Plus Equalizer.

It has a frequency response from 5hz to 100,000hz  $\pm$  1 db. BSR, the ADC equalizer people, make this super equalizer and back it with a 2 year limited warranty. Our \$89 close-out price is just a fraction of its true \$249 retail value.

#### **CAN YOUR STEREO SOUND BETTER?**

Incredibly better. Equalizers are different from regular bass and treble controls. And, 10 band EQs are the best.

Bass controls turn up the entire low end as well as the low mid-range, making the sound muddy and heavy. With an equalizer, you simply pick the exact frequencies you want to enhance.

You can boost the low-bass at 31hz, 62hz and/or 125hz, and the mid-bass at 250hz and 500hz to animate specific areas of the musical spectrum.

And, when you boost the part of the bass you like, you don't disturb the mid-range frequencies and make your favorite singer sound like he has a sore throat.

The high frequencies really determine the clarity and brilliance of your music.

You can boost the mid-range and highs at 1,000hz, 2,000hz, 4,000hz, 8,000hz and 16,000hz. So, you can bring crashing cymbals to life at 16,000hz while at the same time you cut tape hiss or annoying record scratches at 8000hz.

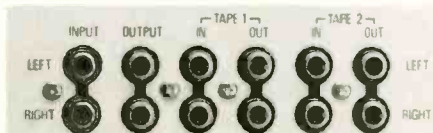
You can also boost or cut specific mid-range frequency areas to add or subtract vocal, trumpets, guitars or whatever instrument ranges you prefer.

#### **GREAT FOR 2 TAPE DECKS**

You can push a button and control all the equalization power to the inputs of two tape decks. So, if you have a cassette deck in your car or a personal stereo that you wear, now you can pre-equalize your cassettes as you record them.

Now you can get all the dramatically enhanced sound wherever you are. This

is an especially great feature for bass starved portables and high-end starved car stereos to make them come alive.



And, look at this. There are two tape inputs and outputs, so you can dub from tape deck A to B, or make two tapes at once with or without equalization.

#### **EASY HOOK UP**

Use your tape monitor circuit, but don't lose it. Now your one tape monitor circuit lets you connect two tape decks.

Just plug the equalizer into the tape 'in' and 'out' jacks on your receiver. We even supply the cables.

As you listen to your records, FM or 'aux', any time you push the tape monitor switch on your receiver you'll hear your music jump to life.

The output from your receiver is always fed directly to your tape decks for recording, and with the touch of a button, you can choose to send equalized or non-equalized signal to your recorders.

When you want to listen to a tape deck, just press a tape monitor button on the equalizer and your tape deck will work exactly as it did before. Except, that now you can choose to listen with or without equalization and you can dub.

You won't be listening to any distortion or hum. The Sound Detonator Plus has a 95db signal to noise ratio and total harmonic distortion of just 0.018%

Once you've set your equalizer controls, switch it in and out of the system. You'll hear such an explosive improvement in sound, you'll think you've added thousands of dollars of new equipment.

#### **WHY A CLOSE-OUT?**

Last year DAK closed out over 18,000 of BSR's 7 band equalizers because BSR had decided to only sell equalizers under their ADC name and they still had some left with the BSR name on them.

Well, as Detroit comes out with new cars each year, ADC comes out with new equalizers. We got them to supply us

with just 15,000 of last year's model before they shut down for the new one.

They had already paid for all the tooling, all the research and design, so we were able to buy these for less than half the normal price, for cold hard cash.

So, you can go to any HiFi store and buy this year's design in an ADC equalizer made by the parent company BSR, or you can get this \$249 value BSR equalizer while our limited supply lasts, for \$89.

#### **THE FINAL FACTS**

There are 20 slide controls, each with a bright LED to clearly show its position. Each control will add or subtract up to 12db. (That's a 24db range!)

There are separate sound detonation slide controls for each channel at 31hz, 62hz, 125hz, 250hz, 500hz, 1,000hz, 2,000hz, 4,000hz, 8,000hz, and 16,000hz.

LED VU meters with  $\pm$ 0.5db accuracy show levels for each channel. It is 17" wide, 6 1/2" deep and 4 1/2" tall.

#### **PUT LIFE INTO YOUR MUSIC RISK FREE**

Prepare for a shock the first time you switch in this equalizer. Instruments you never heard in your music will emerge and bring a lifelike sound that will envelop you and revolutionize your stereo system.

If your system doesn't spring to life, simply return the equalizer within 30 days in its original box for a refund.

To order your Sound Detonator Plus Tape Dubbing BSR 110X10 Band Stereo Frequency Equalizer risk free with your credit card, call toll free or send your check not for ADC's \$249 value, but for only \$89 plus \$7 for postage and handling. Order No. 9724. CA res add 6% tax.

Wake up the sound in your stereo. Your sound will explode with life as you detonate each frequency band with new musical life. And now you'll be in control of two tape decks as an added plus.



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# KENWOOD KRC-9900



*by Julian Hirsch and Christopher Greenleaf*

**Earning top marks for performance in the lab and on the road, the KRC-9900 also scores high on human engineering.**

**T**HE goal of most car stereo product designers is to develop an in-dash unit that has every hot-selling feature there is, a simple, well-planned front panel with almost intuitive operation, and the sonic performance of home components. Kenwood's KRC-9900 is definitely more successful than most in approaching these goals. Its AM/FM digital-synthesis tuner and autoreverse tape player offer a great many control choices without being the least bit complicated to use.

The KRC-9900 is designed for use with one or two external power amplifiers and optional signal-processor modules that are connected by five-pin DIN plugs (or can be adapted for them). A rear-panel switch selects either low (300- $\mu$ V) or high (1-V) line output through the plugs.

The tape player features include the three most popular noise-reduction systems (Dolby B, Dolby C, and dbx), manual settings for both tape equalizations (70 and 120  $\mu$ s), fast wind in both directions (the radio automatically turns on during rewind or fast forward to fill the resulting silence), and a TAPE-ADVANCE function that can be set to skip forward or backward by up to six selections from the one currently being played. During tape advance, the tuner preset buttons indicate how many selections are to be skipped over and are set with a separate button. The tuner does *not* come on in this mode. Tape direction changes automatically at the end of a cassette, or when the user taps the tuning knob. Five LED's (which double as the radio signal-strength meter) light in sequence from left to right or right to left to indicate the tape direction. Either pressing the eject button or turning off the ignition ejects the cassette.

The tuner has three FM bands, with a total of eighteen FM station presets. There is one AM band with six presets. The tuning knob permits manual advance up and down the frequencies, with very fast advance after a couple of seconds. With the seek function you can advance to the next receivable frequency above the one tuned when you tap the tuning knob, and the preset scan lets you hear 5-second samples of whichever band you have selected. If the tuner sensitivity is set to LOCAL, the seek function

stops only at strong signals; the DISTANT setting permits the tuner to advance even to weak stations and to lock them in. On the back of the KRC-9900 is an unexplained adaptor jack labeled in the manual as the "AM stereo adaptor terminal," which leads us to think that Kenwood plans an outboard module for this tuner that will enable it to receive and decode at least one of the four current AM stereo broadcast formats.

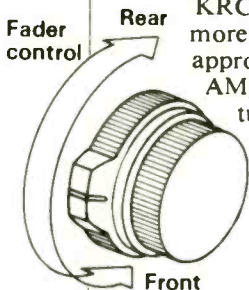
In addition to their volume and tuning functions, the knobs and rings flanking the control panel handle bass, treble, left/right balance, and front/rear fading. The chassis measures 7 $\frac{1}{16}$  x 2 x 5 $\frac{3}{8}$  inches, and the nosepiece is 4 $\frac{1}{8}$  x 1 $\frac{3}{4}$  inches. The suggested retail price is \$659. Kenwood Electronics, Dept. SR, 1315 East Watsoncenter Road, Carson, Calif. 90745.

## Lab Tests

Most of the performance specifications of the Kenwood KRC-9900 would be considered good even for a medium-priced home receiver. In view of that, we were especially impressed by how well it met or surpassed almost all of its ratings. Many automobile receivers we have tested provided much less distinguished performance on the test bench.

It would be hard to single out any specific characteristic in which the unit excelled, since it was good or better than its specs in every one of them with two minor exceptions. The capture ratio, though certainly adequate, fell a little short of the rated 1.5 dB. The tape speed (the accuracy of which was not specified) was very accurate in the forward direction but about 1 per cent slow in reverse.

Like many car radios, the FM section of the KRC-9900 has a signal-operated channel-blend circuit that maintains a reasonably low noise level for weak signals at the expense of less channel separation. Strong signals had good separation, but at 25 dBf (5 microvolts into 75 ohms) it was only 2.5 dB, which is effectively mono reception. The stereo light, however, remained on until the signal level fell to less than 10 dBf (about 0.85 microvolt). Thus, it



indicates that a station is transmitting in stereo, but *not* that it is being heard in stereo. The signal-strength indicator lights, an unusual feature for a car radio, came on at levels from 8 to 50 dBf, defining a typical range of reception conditions.

In addition to its fine measured performance, the exceptional operating flexibility of this receiver has been achieved with a minimum of front-panel control complexity. We found its operation on the test bench to be unusually straightforward. It was actually much simpler to operate than most full-sized home receivers that have much less versatility. The eighteen-station FM memory system, which might represent overkill in a home receiver, could be very useful to someone who regularly travels in several distinct reception areas. Each group of six buttons could be programmed with stations in a specific area.

Although it is certainly possible to squeeze an incredible number of operating features into the small volume of a car radio (especially when it does not contain power amplifiers), it is by no means as easy to devise a front-panel control layout that can be used without the occasional frustration of pressing the wrong button and without constant reference to the operating instructions. On our test bench, the Kenwood KRC-9900 scored high in its "human-engineering" aspects. By my standards, this is one of the best all-around car stereos to come my way. *J.H.*

## Road Tests

Despite the many control options, the KRC-9900 is a conveniently laid-out piece of equipment whose workings are mostly self-explanatory. On the road at night and during different daylight hours, both the layout and the clear but unobtrusive illumination made using it a pleasure, not a battle.

I've learned to accept FM multipath as a fact of life, but as I wound through the reception jungle of Manhattan and Brooklyn streets the multipath effects with this tuner were never objectionable. The audible interference sounded like crinkly, tearing tissue. It was often as loud as the music, but somehow it was not nearly as ire-provoking as other kinds I've heard on the same routes. On the whole, both in and out of town, reception was clean. The FM sound was typically rich, full, and clear enough for me to tell one broadcaster from another. Readers of earlier road tests will know that this is not at all a common trait of car tuners! I frequently reached for the nonexistent mono button, however, because the automatic stereo/high-frequency blend, excellent as it was, was still not as effective a noise reducer as mono would have been for some stations. I would have liked the choice, in any event.

The LOCAL/DISTANT switch was very effective. I needed the local setting just once: at the foot of the Em-

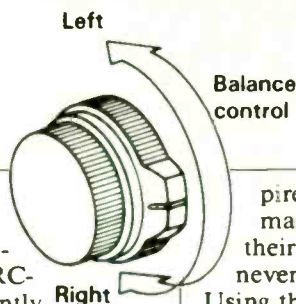
pire State Building, where many New York stations have their transmitters. Otherwise, I never noticed signal overload. Using the manual tuning knob was a bit frustrating, since the rapidity of its advance up and down the scale makes accurate tuning difficult, especially in traffic. It's distracting to see the display zip right past the station you want and have to go back a step at a time. Having eighteen FM presets was a luxury I was unable to take full advantage of in the two weeks I tested the unit, but longer use (especially on trips to other areas I visit frequently) would have made this a very welcome feature. The tuner memory has sufficient retentiveness that brief lapses of power (a few seconds or less) will not wipe out the presets.

***Although it has many features, the Kenwood KRC-9900 is among the simplest I have used in any car.***

The AM performance was relatively clean, with what seemed to me, both in the car and over headphones at home, to be a slight enriching of the upper-bass and lower-midrange frequencies. Given the normally thin sound of some AM stations, this might be helpful. It did not ever seem bottom heavy. I found that I could not get as many AM stations as I'd hoped, and I suspect that the tuner will not receive very weak and distant ones. I'm curious about the rear-panel terminal for a future AM stereo module. I'm sure owners of the KRC-9900 who purchase such an add-on in the future will find AM stereo as attractive and convenient as I do.

I'm not blessed (cursed?) with perfect pitch, but I could detect no differences between forward and reverse tape playback. Pitch was rock steady, to my ear, and the tonal quality in both directions was firm, rich, and quite crystalline, by which

*(Continued on page 28)*



## MEASUREMENTS

**FM mono usable sensitivity** (75-ohm input): 12.8 dBf (1.2  $\mu$ V)

**Mono 50-dB quieting sensitivity** (75-ohm input): 15.8 dBf (1.7  $\mu$ V)

**Stereo 50-dB quieting sensitivity** (75-ohm input): 37 dBf (20  $\mu$ V).

**Tuner signal-to-noise ratio** at 65 dBf: 74 dB

**Tuner distortion** at 65 dBf: 0.3 per cent

**FM frequency response** (-3-dB limits): 20 to 17,000 Hz

**Stereo separation** at 100, 1,000, and 10,000 Hz (at 65 dBf): 36, 37, and 25 dB

**Capture ratio** at 65 dBf: 2.1 dB

**AM rejection** at 65 dBf: 72 dB

**Alternate-channel selectivity**: 80 dB

**Adjacent-channel selectivity**: 10 dB

**Image rejection**: 71.5 dB

**AM frequency response** (-6-dB limits): 26 to 3,400 Hz

**Tape-playback frequency response** (standard BASF test tapes,

-3-dB limits): 120- $\mu$ s EQ—31.5 to 17,000 Hz forward, 31.5 to 14,000 Hz reverse; 70- $\mu$ s EQ—31.5 to 17,000 Hz forward, 31.5 to 16,000 Hz reverse.

**Tape signal-to-noise ratio** (referred to 250 nWb/m at 315 Hz, 120- $\mu$ s EQ): unweighted, 46 dB; with Dolby B and CCIR/ARM weighting, 65 dB; with Dolby C and CCIR/ARM weighting, 73 dB; with dbx and CCIR/ARM weighting, 80 dB

**Flutter**:  $\pm$ 0.1 per cent CCIR-weighted peak; 0.08 per cent JIS-weighted rms

**Tape speed accuracy**:  $\pm$ 0.1 per cent forward, -1.0 per cent reverse (at start or finish of tape)

**Fast rewind time** for C-60: 78 seconds

**Tone-control range**:  $\pm$ 10.5 dB at 100 Hz;  $\pm$ 9, -10 dB at 10,000 Hz

**Amplifier line output** into IHF load (measured at 1,000 Hz): 0.35 volt from 100 per cent modulated FM signal or 250-nWb/m tape



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5 mg. "tar", 0.4 mg. nicotine av. per cigarette. FTC Report FEB. '84

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# MUSICAL

## The CARVER C-1 Sonic Holography Preamplifier: Appreciated for Musakality

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Sonic Holography has been acclaimed as a scientific and artistic achievement of significant merit. Solving the problems of sonic imagery inherent in conventional stereophonic reproduction, Sonic Holography presents timing and phase information that exists in stereo program material but is normally inaudible.

With Sonic Holography, this information emerges in three-dimensional space around the listener who is thus able to establish the precise location of the instruments and voices.

The Carver C-1 is a quality instrument replete with precision gold-band laser-trimmed resistors, life-time lubricated sealed switches, G-10 glass epoxy boards, and machined solid metal parts. The C-1 provides moving coil input, soft touch controls, an infrasonic filter, a readphone amplifier, dual tape monitors, variable turnover tone controls, silent muting, and an external processor loop.

Its straight-wire engineering assures that a watt of input leaves with just 0.000000025 watts of distortion. Or less.

If you seek new levels of detail, openness and three-dimensionality in an audiophile preamplifier, we invite you to audition the CARVER C-1.



C-1

# CARVER

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## Car Stereo

I mean that small changes of tonal color were readily perceptible, allowing the subtleties of performances to come through. I listened mostly to chamber and symphonic music on some new InSync and Sine Qua Non cassettes, both Dolby B and Dolby C, and found that even music of delicate timbre and quiet dynamics was invariably transparent. I made several dbx dubs and have nothing but praise for the way they sounded through the Kenwood electronics.

As with most such features, the TAPE ADVANCE works best with popular cassettes that have clearly delineated silent bands between selections. Except with the dbx tapes, which had greater low-level signals overall, the very wide dynamic range of classical music frequently triggers the sensing device in the player into thinking it's found a silent spot when it has merely happened onto a quiet passage.

I have a few small quibbles. All the knob functions except volume work far too quickly to permit a user to feel secure with them. They are detented, which is little help in the fader or balance controls but help establish nominal center positions for tonal adjustment. Very small arcs of rotation produce enormous balance and fader changes. I also missed a loudness button, which, if well designed, can be a major help in throwing oil on troubled tonal waters in a car.

Those are, indeed, small quibbles when I think of how easy to use and how musical this unit was on the road. As my Volvo jostled over the rough streets south of the Brooklyn Navy Yard and slipped through the FM multipath horrors of Manhattan, the smoothness of the tuner and the cassette mechanism made it very easy to forget that I was hearing music emanating from a small box of mechanical and electrical devices shoehorned into a tiny compartment to the right of the ashtray. I wish I could forget the technical aspects of car audio gear more often! Despite its many features, the KRC-9900 is among the simplest tuner/tape players I've used in any car, and its many tape noise-reduction formats enabled me to carry any of my large, motley collection of tapes off to the beach or elsewhere on the road without wondering if I'd be able to play one of them. A very fine design. C.G.

Circle 145 on reader service card

# 4 out of 5 Sony car stereo owners would go down the same road again.

It seems there is one road that most Sony owners would gladly travel again. The road to a Sony car stereo.

In a recent survey, an overwhelming majority of Sony car stereo owners contacted gave Sony the ultimate testimonial. They said they would be more than willing to buy a Sony again\*. As one Sony owner, Ronald Dikken of Minneapolis, Minnesota, volunteered, "When there's a car stereo that sounds as good and works as well as a Sony, why would you want another one?"

In fact, most Sony car stereo owners when asked went so far as to say that they would keep their car stereos longer than they'd keep their cars. Or, in the words of Valerie Roussel of New Orleans, Louisiana: "My car was in the shop for a few weeks. I missed my car stereo a lot more than my car." And Mark Share of Tempe, Arizona, added, "I have two cars and two kinds of car stereos. I find myself driving the car with the better sounding one—the Sony."

Which is not at all surprising, considering the fact that Sony car stereos are not just engineered to perform reliably. They are also engineered to deliver brilliant high-fidelity stereo sound. Because they take advantage of the same experience and innovative technology that goes into Sony's home stereos.

So if you're in the market for a car stereo, it makes sense to go down the same road that 4 out of 5 Sony owners would travel.

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\*In an independent survey of 200 recent Sony car stereo purchasers who sent in warranty cards, 85% said they'd buy a Sony again. © 1988 Sony Corp. of America. Sony is a reg. trademark of the Sony Corp., 1 Sony Dr., Park Ridge, NJ 07656.





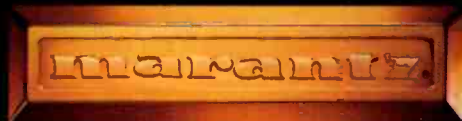
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Introducing Marantz Remote Stereo. Total Remote Control in the palm of your hand. Giving you control of all system functions without ever leaving the comfort of your chair. Or sofa. Or bed.

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Systems, FM and AM stereo receivers to our Digital Compact Discs. Appreciate the ultimate in amplifiers, tuners, cassette decks, turntables and loudspeakers.

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**THE SOLID GOLD SOUND**

CIRCLE NO. 53 ON READER SERVICE CARD

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## How To Read A Test Report

by Julian Hirsch

**I**T has become pretty clear to me over the years that not all our readers completely understand the equipment test reports in STEREO REVIEW. Some misinterpret test data. Others misinterpret the way I describe my subjective reaction to a product under test. And there is undoubtedly some confusion caused by technical terms that are not defined every time they are used.

On the other hand, a fair number of readers have criticized what they consider to be oversimplification and lack of rigor in my treatment of some rather technical subjects. That is perhaps an inevitable consequence of trying to deal with highly technical material in a manner that will be understandable to a large number of readers who are not technical experts. If a report elicits equal criticism from both extremes of our readership, I am probably making the best compromise!

We simply don't have the space in every issue of STEREO REVIEW to publish a complete lexicon of the technical terms and jargon peculiar to the world of hi-fi. But where does that leave the new reader, just trying to find out how good (or bad) some new product is, who has to plow through a mass of technical terms (dB, impedance, etc.)? I advise patience. A few months of reading about hi-fi will build up a familiarity with its vocabulary.

Sooner or later, you will find that the technical side of a report will begin to make sense. Further, from time to time you will find articles and columns dealing with some of the specifics of electronic and acoustic measurements and specifications. We have dealt with most of these in "Technical Talk" in the past, and we intend to continue to deal with them in the future.

### Measurements

One of the recurrent difficulties encountered by inexperienced readers of test reports is a vague or in-



*I happen to have the quaint notion that if a sound quality cannot be heard unmistakably and regularly in a double-blind test, then it is not very important—to me.*

correct understanding of the exact definitions of the terms, which may cause some people to leap to erroneous conclusions. A good example of this is a letter I received last year,

### Tested This Month

NAD 7140 AM/FM receiver  
Koss PortaPro headphones  
Celestion SL-600 speakers  
Magnum 105FM antenna booster  
Marantz CD-54 CD player

after we had begun to report on car stereo receivers. Although the report in question and the graphs published with it made it plain that the r.f. (radio-frequency) input-signal levels were expressed both in the primary units of "dBf" and as microvolts across the 75-ohm input impedance of the receiver, that reader commented on the apparently very high sensitivity of the car radio compared with even the best home receivers, and he questioned the accuracy of the measurements.

He had, of course, overlooked the fact that a given signal power (in dBf) corresponds to only half as many microvolts from a 75-ohm automobile antenna as from the 300-ohm antennas used for most home installations. This had been explained in earlier articles, and we took pains to list the 75-ohm impedance rating in the report, but such distinctions are doubtless lost on many nontechnical readers.

There is little that can be done about this problem without a laborious repetition of the fundamentals in each report, which would result in fewer reports per issue. My advice is to read the "Lab Tests" and "Measurements" sections very carefully before leaping to conclusions.

### Comments

The most important guide to what I think about a product can be found in the "Comments" section of the report. Actually, my "real opinion" (which some readers seem to think is different from the published one) is pretty much what you read in these pages. If the comments sometimes seem bland, that is merely a reflection of the basic similarity between so many competing products. Let me emphasize that I am not hiding anything behind what might seem like vague or non-committal language.

Not every product (very few, as a matter of fact) can be truly innovative or even represent a significant advance over its predecessors or competitors. If, as is often the case, a new product differs from others principally in its control or display features, that might well be enough to make it *your* choice even if it fails to thrill *me*. The simple listing and explanation of such features (we try

to avoid the colorful but obfuscatory adjectives often applied by manufacturers) can be a useful guide to the prospective buyer. In fact, it is likely to be much more important than a confusing array of performance measurements whose real significance may be largely unappreciated by a lay reader.

When a clearly negative comment appears in one of my reports, it often reflects a fairly serious (but not necessarily disqualifying) deviation from a published rating or from what I consider to be suitable performance for such a product. A confusing control marking or function, or a patently useless or undesirable feature that increases the cost without benefiting the user, is also likely to draw my fire. Regular readers of my reports may try to "read between the lines," but that should not be necessary. Take my words literally, and you'll be on target.

If I say that a component is "bulletproof," or virtually indestructible, you can take that as high praise.

The aspect of reliability is of *paramount* importance to me. The "best" product is worthless when it is inoperative. We can't test for long-term reliability, but we can make some predictions based on experience and a product's design.

If I don't comment on the sound of a component, it can mean any of several things. Most likely, the item in question does not and should not have a "sound" of its own. This applies to almost all amplifiers and also to such items as cables and even most turntables and tone arms. Many people disagree strongly with my views on this. If you are one of them, by all means follow the verdict of your own ears. Most people tend to hear what they expect or want to hear, and that is what hi-fi is all about, isn't it? I just happen to have the quaint notion that if a sound quality cannot be heard unmistakably and regularly (not simply a little more often than chance allows) in a controlled double-blind test, then it is not very im-

portant—to *me*. Please, before you get too excited, reread that last sentence. It means *exactly what it says*, no more and no less!

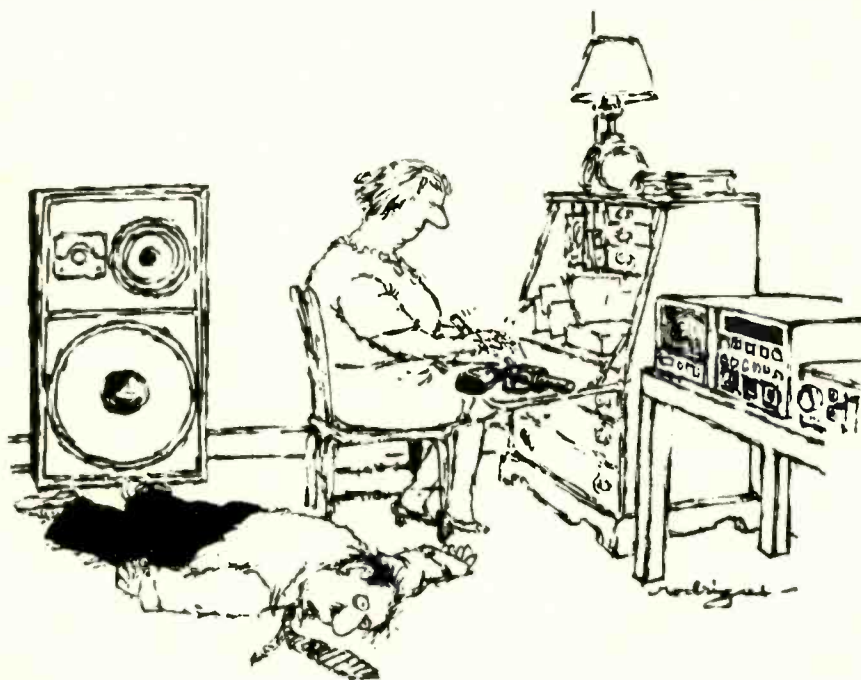
You will sometimes find the same product reviewed by me in STEREO

***A clearly negative comment often reflects a serious (but not necessarily disqualifying) deviation from what I consider suitable performance for such a product.***

REVIEW and by another reviewer in some other magazine. The measured performance may or may not match in both reviews. This is quite normal given the nature of many of the tests we make, differences in test instrumentation and methods, and the probability that different product samples were used for the two tests. The other reviewer, however, may comment on sonic properties that were completely ignored in my report. If this seems odd, reread the preceding paragraph.

Just to set the matter straight, I don't think I have a "tin ear" by any means. Often I *do* hear (or *think* I hear, which is usually the same thing) subtle differences between products that measure almost alike. Since these differences, even if real, are usually entirely trivial, I generally do not get excited about them or even mention them. Incidentally, many of the very *obvious* differences between speakers are still not enough to say unequivocally that one is "better" than the other. I prefer to try to describe a general coloration rather than attempt a quality ranking, which is rarely possible in such a case.

Finally, if I really think a product is remarkable, I do not attempt to hide my feelings about that either. You won't have to read between the lines of a test report to discover my "real opinion." □



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We're referring, of course, to our proprietary LSIs (Large Scale Integrated circuits). And the approach they use to process digital signals.

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\*Suggested U.S.A. retail prices



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



# NAD 7140 RECEIVER

*Take one part Schottz tuner wizardry, lots of dynamic headroom, and a bargain price, and you get one hell of a receiver.*

**I**N its design and performance, NAD's 7140 AM/FM stereo receiver is an exceptional value. Both its amplifier and tuner sections incorporate valuable circuit features that place the unit far ahead of similarly priced competition.

Some of this can be gleaned from the published specifications. Although the amplifier section is rated at a modest 40 watts per channel into 8-ohm loads (between 20 and 20,000 Hz, with no more than 0.03 per cent total-harmonic or intermodulation distortion), it follows the NAD tradition of a current-output capability far exceeding that of most comparably rated amplifiers. Since it also has a relatively high dynamic-headroom rating of 3 dB, in actual use the power amplifier section of the Model 7140 is much



PHOTOS BY ROY SCHNEIDER

## FEATURES

- High output-current capability
- Wide dynamic headroom
- Digital-frequency-synthesis tuner with five AM and five FM presets, scan and manual tuning modes
- Stereo headphone jack
- Connections and switching for two pairs of loudspeakers
- Center-detented bass and treble controls
- Bass EQ circuit with 6-dB boost at 32 Hz for extended bass with bookshelf speakers
- Switchable infrasonic filter
- Dynamic Separation tuner circuit for improved reception with inferior FM signals
- One tape-monitor loop
- Separate AUX and CD inputs
- Low-level control reduces volume by 20 dB
- Switchable loudness compensation
- Switchable soft-clipping circuit for reduced audible distortion at highest volume levels
- Amplifier can be bridged for high-power mono operation
- Two a.c. convenience outlets, one switched
- Phono input with selectable gain for moving-magnet and moving-coil cartridges

more powerful than its specs would imply.

The NAD design principles recognize that the minimum impedance of most speakers is somewhat lower than their nominal ratings. It is not uncommon for the impedance of a "4-ohm" speaker to fall as low as 2.5 ohms at some frequencies. If two sets of such speakers are operated in parallel, an amplifier with limited current capability may produce distorted sound or even over-

heat and shut down under prolonged or high-level operation. To help deal with this problem, NAD provides a switch in the rear of the Model 7140 receiver to reduce the operating voltage on its output transistors when driving loads of 4 ohms or less (this is designated the "normal" setting). When the switch is set to its "8-ohm" position, the increased power-supply voltage enables the amplifier to deliver its maximum output to nominally 8-ohm speakers.

In some ways, the FM-tuner section of the NAD 7140 is even more impressive than its amplifier. It is highly sensitive and has less noise, both in mono and stereo, than most of the top-quality separate tuners (let alone receivers) that we have tested. The tuner features a novel "Dynamic Separation" circuit designed by Larry

## HIRSCH-HOUCK LAB MEASUREMENTS

### ■ Audio Amplifier

**Amplifier power output at clipping,** 1,000 Hz: 8-ohm loads, 66 watts; 4-ohm loads, 90 watts; 2-ohm loads 98 watts

**Dynamic power output:** 8 ohms, 90 watts; 4 ohms, 148 watts; 2 ohms, 233 watts

**Clipping headroom (8 ohms):** 2.17 dB

**Dynamic headroom (8 ohms):** 3.5 dB

**Harmonic distortion at 1,000 Hz,** 8 ohms: 1 watt, 0.002 per cent; 40 watts, 0.003 per cent

**Slew factor:** greater than 25

**Input sensitivity for 1-watt output:** phono (MM), 0.4 mV; phono (MC), 0.04 mV; aux, 27.5 mV

**Phono (MM) input overload:** 200 mV

**A-weighted noise referred to 1 watt:** phono (MM), -85 dB; phono (MC), -78 dB; aux, -90 dB

**Phono input impedance:** 48,000 ohms

**RIAA phono equalization error:** ±0.5 dB, 20 to 20,000 Hz

### ■ FM Tuner Section

**Usable sensitivity (mono):** 10.8 dBf (1.9 µV)

**50-dB quieting sensitivity:** mono, 10.8 dBf (1.9 µV); stereo, Dynamic Separation off, 35 dBf (30 µV); stereo, Dynamic Separation on, 32 dBf (22 µV)

**Signal-to-noise ratio at 65 dBf:**

mono, 83 dB; stereo, 72 dB  
**Distortion (THD + noise) at (65 dBf):** mono, 0.074 per cent; stereo, 0.1 per cent

**Capture ratio (65 dBf):** 1.76 dB

**AM rejection (65 dBf):** 67 dB

**Image rejection:** 81 dB

**Alternate-channel selectivity:** 95 dB

**Adjacent-channel selectivity:** 7 dB

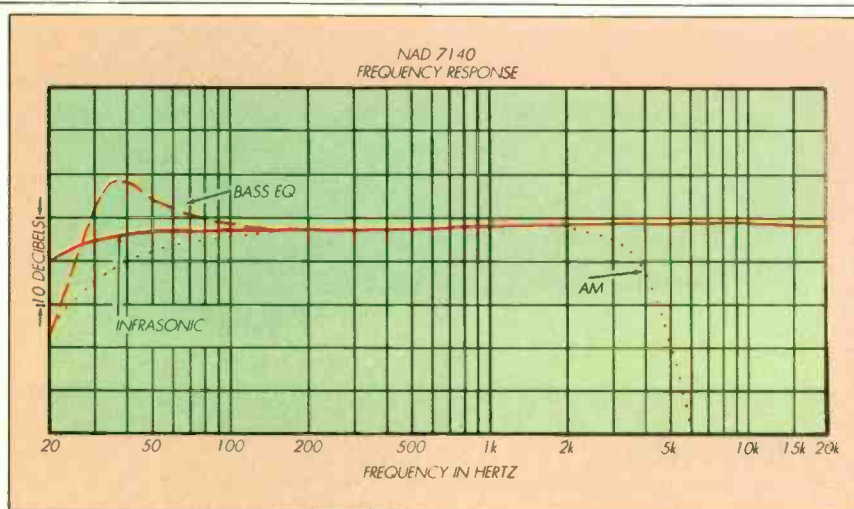
**Stereo threshold:** 25 dBf (10 µV)

**19-kHz pilot-carrier leakage:** -74 dB

**Hum:** -75 dB

**Frequency response (30 to 15,000 Hz):** +0.1, -0.6 dB

**Stereo channel separation:** 100 Hz, 44.5 dB; 1,000 Hz, 42.5 dB; 10,000 Hz, 38 dB



Schotz and adapted to this receiver by NAD engineers. This circuit reduces hiss on weak stereo FM signals without subjective loss of either channel separation or high-frequency response. It is essentially a signal-controlled high-frequency channel-blending circuit whose operation is

***The NAD 7140's tuner is one of the most sensitive we've had the pleasure to use, and its other characteristics are good to outstanding.***

determined by the signal strength, the FM modulation level, and the frequency content of the program. For signal levels under about 150  $\mu$ V (48 dBf) and low modulation levels, the Dynamic Separation circuit blends the channels at high frequencies to reduce the noise by 3 dB. But since the separation at or under 1,000 Hz does not drop below 10 dB, a full stereo effect is maintained and there are no unnatural shifts of the stereo image as the circuit operates. When the FM signal is modulated at normal levels, if it contains much high-frequency information, or if its strength exceeds the threshold, full stereo separation is restored.

Like many receivers, the 7140 has

antenna inputs for 75- or 300-ohm FM antennas, but unlike most others, the 7140's coaxial fitting for the 75-ohm input carries the signal directly to the r.f. amplifier stage. According to NAD, this gives higher tuner sensitivity than that achieved by the usual method of connecting the 75-ohm antenna feeder across one half of the internal 300-ohm input transformer. A nice touch.

The all-metal cabinet of the NAD 7140 is finished in dark gray. It measures 16½ inches wide, 13¾ inches deep, and 4 inches high, and it weighs 20 pounds, 5 ounces. Price: \$478. NAD (USA), Inc., Dept. SR, 675 Canton St., Norwood, Mass. 02062.

## Lab Tests

The standard one-hour preconditioning at one-third rated power did no more than make the top of the NAD 7140's cabinet moderately warm (its heat sinks are within the cabinet). The 1,000-Hz clipping-power output into 8-ohm loads was 66 watts per channel at the 8-OHM HIGH setting of the speaker selector switch. This setting was used for all our tests, even driving 4-ohm and 2-ohm loads. The Model 7140 distinguished itself in these tests. Not only was the 2-ohm clipping output a full 98 watts per channel at 1,000 Hz, but with the 20-millisecond tone bursts of the dynamic-headroom test it produced an astounding 233 watts per channel! The only indication that we might be pushing the receiver too far came during our distortion measurements with both

channels driving 2-ohm loads, when the a.c. line fuse blew at 90 watts output—and this probably would not have happened if we had used the "normal" 4-ohm setting of the speaker-impedance switch. In all other respects, however, the 7140 amplifier handled the abuse of our most severe tests with ease.

The distortion characteristics of the amplifier were equally striking. In fact, at any power up to clipping, at any audio frequency, and with any load impedance from 2 to 8 ohms, the distortion never exceeded 0.01 per cent. Most of the time it was between 0.002 and 0.003 per cent.

FM tuner performance was equal-

***Considering the way it performs with low impedances, it seems incongruous to call this a "40-watt" amp.***

ly gratifying. The Dynamic Separation circuit performed exactly as described by NAD. When the circuit was on, the 50-dB stereo quieting sensitivity of the Model 7140 was 32 dBf (22 microvolts), a figure rivaled among receivers we have tested recently only by two others, one of which was the NAD 7150—whose FM tuner, not coincidentally, was also designed by Larry Schotz. The noise reduction afforded by this circuit on weak stereo signals was plainly audible and worthwhile, and we were never able to detect any signs of its dynamic operation.

## Comments

The performance of the NAD 7140 is difficult to criticize. In fact, it is so outstanding, in so many respects, that there is a real danger of our lapsing into fulsome praise instead of offering genuine criticism. Let us say only that its FM tuner is one of the most sensitive we have had the pleasure of using—in a meaningful sense, such as its exceptional stereo 50-dB quieting sensitivity. The signal-to-noise ratio is also exceptional. The tuner's other



## CONCORD. THE DIFFERENCE IS WORTH THE DIFFERENCE.

Despite the fact that the Concord HPL-532 is ingeniously designed to fit everybody's car, it's definitely not for everybody. As Stereo Review said, Concord "... is truly an audiophile's car stereo."

And what makes it so different?

### 4-GANG FM TUNER

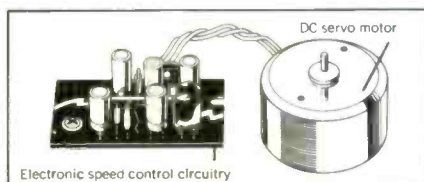
For extraordinarily clear FM reception, the Concord HPL-532 has an exclusive 4-gang digital tuner that provides exceptional station sensitivity & selectivity.

And to make selecting your favorite stations even easier it has a 10-station preset memory.

But, as Concord's 22 years of innovative stereo design would lead you to expect, that is only the beginning.

### DC SERVO DRIVE MOTOR

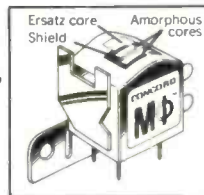
We've designed an exclusive electronically controlled DC servo tape transport drive.



The result? Superior speed accuracy, lower wow and flutter, and over double the motor life.

### AMORPHOUS CORE TAPE HEAD

We've also engineered a new match-phased amorphous core tape head design, which means a revolutionary improvement in tape frequency response out to 20,000 Hz.



It's an improvement you'll have to hear to believe.

### TWO WAY/FOUR WAY AMPLIFIERS

And wait until you hear the authentic high fidelity sound reproduction of the HPL-532. It delivers an impressive 12 watts per channel into 4 ohms 30-20,000 Hz with less than 0.8% THD.

In addition, it can deliver 5 watts per channel into each speaker of a four speaker system, because of an ingenious two way/four way configuration and a front/rear low level fader.

All in all it's the greatest full bandwidth power at low distortion

you can get in a car stereo without add-on amplifiers.

### OTHER IMPORTANT DIFFERENCES

With its exclusive signal processor circuitry the HPL-532 will easily handle anything you want to plug into it.

Like Concord's Dolby\* C.

Or dbx\*\* adaptors.

Even imagers or equalizers.

And with lighted switches and function indicators the Concord HPL-532 is as easy to play at night as it is to play in the daytime.

And because of its front load mechanism, it's even easier to load.

All things considered the Concord HPL-532 is an extraordinary car stereo.

Of course at around \$600 it's not inexpensive.

But when you add up all its features you might say this.

The difference is worth the difference.

\*Dolby is the registered trademark of Dolby Labs.  
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**SPECIFICATIONS:** Tuner Section Sensitivity: 30dB Quieting 1.0 Microvolts 11.2dBf, Stereo separation: min. 35dB, Frequency responses:  $\pm 2$ dB, 30-16,000 Hz **Tape Section** Frequency response:  $\pm 2$ dB, Standard tape: 30-15,000 Hz, Metal tape: 30-20,000 Hz, Wow & flutter: 0.08% WRMS **Amplifier Section** Maximum power: 25 watts/ch, Two-way power: 12 watts min. RMS per channel into 4 ohms, 30-20,000 Hz with 0.8 THD max, Four-way power: 5 watts min. RMS per channel into 4 ohms, 30-20,000 Hz with 0.8 THD max

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9 mg "tar," 0.6 mg nicotine av. per cigarette, FTC Report Mar. '84



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characteristics are equally impressive, ranging from good to outstanding, and it had no weaknesses that we could discover. Even the AM section had an unusually wide and flat response.

The amplifier section of the NAD 7140 recalls our reaction to the NAD 3020 amplifier that we tested several years ago. At the time, we remarked to the effect that an "NAD watt" is equivalent to at least two of anyone else's. This commentary on a NAD amplifier's conservative ratings and high current-delivering capacity (made at a time when that quality was much less common than it is today) applies in full measure to the new 7140. Considering how it performs with low-impedance speaker loads, it seems incongruous to call it a "40-watt" amp.

The 7140's great power reserve also makes its BASS EQ feature truly usable, since even slight boosts in the low frequencies can require substantial output power. It gives almost any reasonably good small speaker an added low-bass solidity with not a trace of heaviness or boominess. This circuit also provides a steep infrasonic cutoff at a rate of about 36 dB per octave below 30 Hz, making it safe for use with vented speakers that might otherwise be damaged by excessive infrasonic input.

The few problems with the NAD 7140 are mostly in the area of additional operating flexibility that is offered by some of today's receivers and amplifiers. For example, there is provision for only one tape deck

***The 7140's BASS EQ circuit gives small speakers an added low-base solidity without heaviness or boominess.***

(and it is not possible to record from one source while listening to another). On the other hand, separate CD and AUX inputs are a definite plus. There is also only one phono input, although it can be switched to give a

20-dB higher gain for use with moving-coil cartridges. Since the amplifier's input impedance is always a nominal 47,000 ohms, some people may wish to load their moving-coil cartridges with 100 ohms or whatever they feel to be a suitable value. As a rule, this is unnecessary with moving-magnet cartridges.

***The logical control functions of this receiver are apparent on the front panel as well as elsewhere.***

We appreciated the overall concern for "human engineering" and logical control functions that is apparent on the front panel as well as elsewhere in the NAD 7140 receiver. For example, in "normal" operation, when none of the pushbuttons on the panel are pushed in, the Dynamic Separation circuit and the in-

frasonic filter are functional, the BASS EQ and loudness compensation are inactive—providing what we consider to be the logical set of basic operating conditions.

One of the front-panel features that is not immediately obvious, but is unique to this receiver, is the concentric arrangement of the volume and balance controls. The balance knob is partly recessed *inside* the volume control, opposite to the arrangement on many other amplifiers and receivers. It is just about impossible to shift the balance setting accidentally when adjusting volume, yet the control is instantly accessible and its bar shape shows its setting at a glance. This is a small but revealing example of the kind of thinking that has gone into most aspects of the design of this receiver.

By any standard, the NAD 7140 is a very fine receiver. At its price, its overall performance is unmatched. Unless you need features this product doesn't have, its impressive combination of performance qualities, at a price only slightly higher than that of most ordinary receivers, makes it a bargain.

***Circle 140 on reader service card***



***“ . . . Notice here, sir, the 6-dB-per-octave passive filter that insures the correct attenuation slope. Of course, the actual mid-frequency cutoff point utilizes a high-impedance load in the range of 10,000 ohms in parallel with 1,000 picofarads at -4 decibels, thus permitting the audio signal to . . . ”***



DA-600

# How to tell a peach from a lemon.

Judging from the specs, all CD players are pretty much the same. They all offer a 95dB dynamic range. No audible noise. And wow and flutter below the level of measurement.

So how do you tell the difference?

By little things — like the circuitry. For example, Hitachi's new DA-600, DA-550 and compact DA-3500 use integrated circuits in place of discrete components. And advanced LSIs in place of ICs.

Which means fewer parts, and fewer things to break down.

Another difference is operating convenience. Some makers try to "downsize" circuitry by downgrading performance. So look for features like Random Memory Programming, which lets you enjoy

songs in any order you choose. 10-key direct control, which makes programming fast and easy. And Index Search, which lets you access certain passages *within* a selection — instantly.

You'll find these features — and more — on all Hitachi CD players.

What's more, we're one of the few makers to build nearly all the player parts ourselves. So we're one of the few makers to control quality directly at every step of the production process. And because we were among the first to introduce CD players to the market, we've got experience few can match.

So get a CD player you'll never sour on. A Hitachi.

#### ▲ DA-600

- Random Memory Programming
- Wireless remote control
- 10-key direct operation
- Variable Skip Search



#### ◀ DA-550

- Random Memory Programming
- 10-key direct operation
- Variable Skip Search
- Index Search



#### ◀ DA-3500

- Compact design
- Random Memory Programming
- 10-key direct operation
- Index Search



# HITACHI

CIRCLE NO. 13 ON READER SERVICE CARD

# KOSS PORTAPRO STEREO HEADPHONES

*Proving, in no uncertain terms, that good bass performance is possible from lightweight, portable headphones*



## FEATURES

- Dynamic high-velocity elements
- Adjustable "temporal pads" on headband hold phones in place during jogging or other physical activity
- Replaceable foam ear cushions
- Mute switch temporarily lowers playback level
- Miniature (1/8-inch) phone plug with screw-on adapter for standard 1/4-inch jacks
- 60-ohm rated impedance

**T**HE small size, light weight, high sensitivity, and startlingly good bass response of the Koss PortaPro headphones make them ideal for use with a personal-portable radio or cassette player, and they are equally suitable for a home component system.

Despite its lightweight construction, the PortaPro is designed for rough use (within reason, of course). To protect the earpieces during

transit, the flexible metal headband can be curled up around the folded earpieces, forming a compact and sturdy circular assembly about 3 1/2 inches in diameter, easily stored in a pocket or purse.

The earpieces are mounted on pivots that allow ample movement to fit anyone comfortably. The headband itself has what Koss calls "temporal pads," pieces of padded foam that come between the headband and the wearer's head, thus placing much of the inward pressure

of the headphones on the side of the head rather than on the ears themselves. The temporal pads also help to hold the phones in place during jogging or running, and each has a three-step adjustment of the remaining force exerted on the ears by the earpieces.

Each earpiece is about 1 3/4 inches in diameter and has a replaceable foam plastic ear cushion. Exclusive of the cord and plug, the Koss PortaPro weighs a mere 2 ounces.

A light, rubber-covered cord connects to each earpiece. The two cords join in a "Y" to form a thin, straight cable about 6 feet long. At the "Y" junction is a small round MUTE button with a clip to hold it to a pocket or shirt front, so that even the slight weight of the connecting cord can be removed from the weight of the phones themselves (and from the wearer's head). The cable is fitted with a miniature stereo plug (1/8-inch diameter) that fits any personal portable player, and a sturdy screw-on adapter is furnished with the standard 1/4-inch phone jacks of home hi-fi components. Price: \$59.95. Koss Corporation, Dept. SR, 4129 N. Port Washington Ave., Milwaukee, Wis. 53212.

## Lab Tests

In general, *supra*-aural headphones (which rest on the wearer's ears but do not seal around them to maintain acoustic pressure at very low frequencies) are comfortable and light to wear, and often they deliver a very satisfying sound quality. However, most of them sacrifice much of the low bass range because, unlike conventional *circum*aural phones, they do not provide an airtight seal between the phones and the wearer's head. Though it is a *supra*-aural design, the Koss PortaPro has a strong, clean bass response that rivals or even surpasses that of many *circum*aural phones. As a matter of fact, our IQS FFT analyzer measurement indicated a healthy bass output down to 10 Hz or so, although this is below the audible frequency range.

There was a prominent rise in output to a maximum of about 20 dB at 11,000 Hz, above which the response fell off steeply (the re-

sponse of the microphone we use in our ANSI headphone-coupler measurements also rolls off above 15,000 Hz). It appears likely that much, if not all, of the 11,000-Hz peak was an artifact of the coupler measurement, since the sound of the PortaPro did not exhibit any of the stridency or edginess that would normally be associated with such a peak in an amplifier, loudspeaker, or phono cartridge. Besides, we have seen this peak before on measurements of quite different-sounding headphones.

Overall, the frequency response of the PortaPro headphones, as determined by a warble-tone sweep, was an impressive  $\pm 3.5$  dB from 20 to 3,500 Hz. Above the latter frequency, coupler resonance effects begin to show up in the response curve.

The impedance of the PortaPro was slightly higher than the rated 60 ohms, measuring about 85 ohms over most of the audio range and rising only to about 125 ohms at 90 Hz. Harmonic distortion with a 0.33-volt drive level at 1,000 Hz was about 0.3 per cent, and it ac-

tually *decreased* slightly at higher levels, to 0.15 per cent at 1.5 volts (which produced an ear-shattering 120 dB SPL). At 100 Hz the distortion was still under 1 per cent at levels of 100 dB or so, and it was only 3.6 per cent at a 1-volt input (120 dB SPL).

## Comments

The listening quality of the Koss PortaPro phones was excellent—good enough, in fact, that we would have no qualms about recommending them for use with a good home hi-fi system. When we listened to low-frequency sine-wave signals through them, it was plain that they could deliver a very healthy amount of low bass energy (in the 30- to 60-Hz range, for example). At first, the strong bass output of the phones (whose output in the 60- to 150-Hz range was about 5 dB greater than between 500 and 1,500 Hz) tended to give an impression of insufficient highs, but further listening dispelled that impression.

Although we did not use these phones with a personal portable player, we have no doubt that they would do justice to any of them and, because of their high sensitivity,

will probably deliver a higher sound level than the phones that come with most such units. Caution is advised when driving the PortaPro phones, even from a low-power source, to keep the sound level at a reasonable point. Only 100 milliwatts are required to generate a deafening 120-dB SPL! The MUTE button seems to lower the volume only slightly—we would guess by 6 to 10 dB—while held in (there is no locking provision).

No treatment of headphones is

***The listening quality of the Koss PortaPro was excellent—we have no qualms about recommending it for use with a good home hi-fi system.***

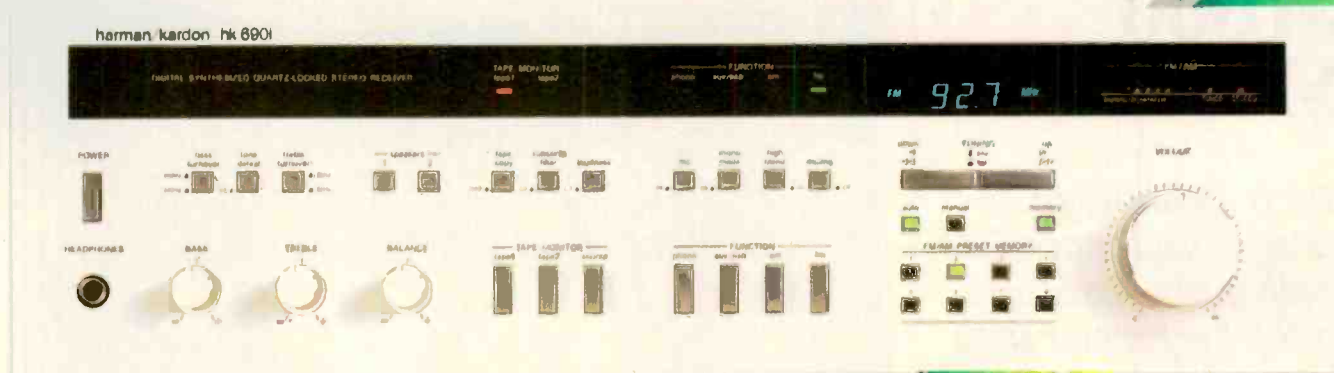


complete without a consideration of their wearing comfort. While this is a very personal and subjective matter, we felt that the PortaPro was one of the most comfortable phones we have had the pleasure of using. One is hardly aware of their presence on the head, since when they are adjusted properly there is almost no pressure on the ears (the "temporal pads" produce a rather different sensation on the side of the head than ordinary earpieces do on the ears). However, you will probably have to read the instructions to discover how to convert the settings from "light" to "firm," a simple procedure that is nonetheless not at all obvious!

Finally, although the PortaPro phones are light and small, they are surprisingly sturdy. We would have no hesitation in rolling them up and stuffing them in a pocket, for the earpieces are well protected by the steel headband. The bottom line, as we see it, is that these are excellent phones, suitable for a number of very different and demanding applications.

**Circle 141 on reader service card**

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# CELESTION SL600 SPEAKER

*High-technology design and materials help make the SL600 a top performer with smooth response and high-power capability*

**T**HE Celestion SL600 is a near-twin to the company's SL6, a speaker whose introduction a couple of years ago aroused considerable favorable comment in the audio world. Although the two speakers use the same two drivers and crossover networks, and although they are almost exactly the same size, the SL600 costs nearly twice as much as the SL6. Why is this? Because the SL600, in design and execution, is truly a "high-technology" loudspeaker system.

For example, the cabinet material is really exotic: an aluminum honeycomb sandwich structure called "Aerolam," which was originally developed for aircraft floors. Aerolam is characterized by very light weight and high stiffness, both desirable characteristics in a loudspeaker cabinet. Such properties work to eliminate the resonances unavoidable in wooden cabinets, resonances that Celestion engineers believed imparted some slight coloration to the sound of the SL6 (and, for that matter, to any speaker using conventional wooden cabinet constructions).

Aerolam's honeycomb sandwich, like any structural material, does have resonances, but because of



## FEATURES

- Two-way acoustic-suspension system, with 6½-inch woofer and 1¼-inch d.b.m.e. tweeter
- Crossover frequency: 2,300 Hz
- Filter in crossover compensates for

- tweeter resonance
- Sealed enclosure made of Aerolam laminated aluminum honeycomb
- Nextel dark gray finish
- Rated impedance: 8 ohms
- Amplifier requirements: 35-120 watts per channel

its high stiffness-to-weight ratio these occur at much higher frequencies than in a wooden cabinet and are less likely to be excited by the woofer in its frequency range. The inside of the SL600 cabinet is also treated with acoustically absorbent material to damp most of the remaining cabinet-wall resonances,

which lie in the range of 1 to 3 kHz.

The driver design is also unique. For one thing, the aluminum tweeter dome is integral with its voice-coil former, eliminating any possible decoupling effects from conventional glue joints and providing efficient conduction of heat from the voice coil. The woofer cone, made of Kobex PVC plastic, is molded with an integral plastic center cap, replacing the usual glued-on dustcap and providing a single point of attachment for the voice-coil former. One benefit of this unconventional driver design is said to

## HIRSCH-HOUCK LAB MEASUREMENTS

**Composite frequency response:** 36 to 20,000 Hz  $\pm 6$  dB

**Sensitivity:** 84 dB SPL at 1 meter with 2.83 volts input (1 watt into 8 ohms)

**Impedance:** 5 to 38 ohms from 20 to 20,000 Hz (4-ohm minimum at 18,000 Hz)

**Phase coherence:** group-delay

variation from 3,000 to 20,000 Hz,  $\pm 0.15$  millisecond

**Bass distortion** (measured at input level needed for 90-dB SPL output at 1,000 Hz): 0.8 per cent at 100 Hz; 7.1 per cent at 30 Hz

**Power handling ability:** 100 Hz, 200 watts; 1,000 Hz, 140 watts; 10,000 Hz, 430 watts

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be very high power handling ability. The SL600 is rated for use with up to 100 watts of program material and may be used safely with amplifiers rated at 100 watts or even more if reasonable care is exercised in the choice of playback level.

The exterior of the cabinet is finished with Nextel, a dark gray paint with a smooth but velvet-like texture. The drivers are mounted flush with the metal front board of the cabinet, and no grille is used, though the tweeter is protected from prying fingers by a metal screen. Mating banana plugs are furnished for the connection jacks, located in the rear of the cabinet, and a pair of wooden stands are supplied with each pair of speakers, supporting them 18 inches above the floor. The hollow upright posts of the stands are meant to be filled with sand to damp their mechanical resonances.

The SL600 is a compact speaker measuring 14½ x 8 x 9¼ inches and weighing only 11¼ pounds. No level balancing or response adjustments are needed or provided. Price: \$1,500 per pair, including stands. Celestion Industries, Inc., Dept. SR, Kuniholm Drive, Box 521, Holliston, Mass. 07146.

## Lab Tests

Our quasi-anechoic frequency-response measurements, made with an IQS FFT analysis system, agreed quite well with the swept-sine-wave frequency-response curves furnished by Celestion for the test units.

However, our measurement showed an increased output in the mid and upper bass. At a 1-meter distance (with the speaker on its stand) the output

varied only 7 dB overall from about 3,000 to 22,000 Hz. Through the most audible part of that range (up to 11,000 Hz) the total variation was only 3 dB.

A notch at the 2,300-Hz crossover frequency was visible in our measurement (and, at a reduced ampli-

***We were impressed by how the Celestion SL600's handled very high power inputs, yet gave no sense of compression.***

tude, in the Celestion curves). Other variations, including a small  $\pm 1$ -dB ripple in the 3,000- to 6,000-Hz range, and the tweeter resonance at 20,400 Hz were also present in our measurements exactly as they were in the Celestion curves. The tweeter resonance, incidentally, is not damped in the speaker driver, but is equalized out by a notch filter that forms a part of the crossover network. The filter's effectiveness can be seen in the small residual rise in output at the tweeter resonance frequency (only about 2 dB).

Our averaged room-response measurements conformed reasonably well to the anechoic measurements, though narrow-band effects such as the crossover notch were greatly reduced in amplitude. Our close-miked woofer-only response curve showed a maximum output between 100 and 150 Hz, falling off about 6 dB from there to 1,500 Hz and at a 12-dB-per-octave rate below the woofer resonance at 65 Hz. We used the FFT data to aid us in splicing this curve to the averaged room-response curve, resulting in an overall 8-dB variation from 500 Hz to more than 20,000 Hz and a further rise to a maximum of +4 dB at 120 Hz. The speaker sensitivity was moderately low, though slightly better than rated.

Our bass distortion measurement was made with a drive level corresponding to the midrange 90-dB SPL level, or a constant drive of 5.7 volts. It was most impressive to see (and hear) how the diminutive woofer delivered a solid bass output with less than 1 per cent harmonic distortion down to about 75 Hz, and a gradual rise to only 7 per cent distortion at 30 Hz. The group delay varied only about 0.2 milliseconds between 3,000 and 20,000 Hz. The tweeter's dispersion, despite its rela-

tively large diameter, was quite good. The response curves measured on axis and 30 degrees off axis began to diverge above 7,000 Hz, but the difference between them did not exceed 6 dB up to about 15,000 Hz.

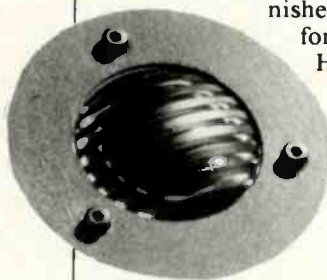
We checked the peak power handling ability of the speaker (an important consideration, given the small size of its drivers) with a tone-burst signal of one cycle "on" and 128 cycles "off." The test frequencies were 100 Hz, 1,000 Hz, and 10,000 Hz. The drive level was increased until definite waveform distortion was visible either in the acoustic output of the speaker or in the amplifier output signal. The corresponding drive level, expressed in rms volts (not "peak," which gives a doubled power figure), was used with the actual measured impedance at that frequency to compute the power input. Since the impedance is not necessarily a pure resist-

***Judging the rigidity of the aluminum honeycomb cabinet by the knuckle-rapping test produces an effect something like that of rapping a concrete block.***

ance, this is not a true power, but it indicates how much drive level the speaker can handle. At the three test frequencies, the measured limits were 200 watts, 140 watts, and 430 watts. But only during the 100-Hz test was acoustic distortion observed, the other measurements being limited by amplifier clipping.

## Comments

On first hearing the Celestion SL600 speakers, and before making any measurements, we were aware of their smoothness, mingled with a surprising sense of warmth. That warmth is one of the most unexpected qualities of this speaker and



Close-up of Celestion SL600 dome tweeter.



stems probably from the slight elevation in upper bass response. It even sometimes tends to sound heavy, especially when reproducing male voices. The generally downward sloping (with increasing frequency) overall room-response curve gave it a soft quality, not really lacking in highs but completely without the shrillness that mars the sound of many small speakers.

The imaging qualities of these speakers have received much favorable comment, particularly in the British audio press. Although at times we heard a quality of depth that seemed less obvious with other speakers, this effect was not apparent with most program material. To us an additional octave or so of low bass would be preferable to the possibly superior imaging qualities of the SL600, but that is a purely personal reaction, and everybody will have his own ideas on the matter.

We were quite impressed by how well the SL600's handled very high power inputs. They performed well during our tone-burst measurements, but we were even more convinced by the way that they could be played about as loud as we could tolerate (with frequent peaks of 350 watts or more) yet give almost no sense of strain or compression. Nevertheless, in view of their cost, we were reluctant to push these speakers to their utmost, preferring not to risk their destruction!

Attempting to judge the rigidity of the aluminum honeycomb cabinet by the usual knuckle-rapping test produces an effect much like that of rapping a concrete block. Certainly we have never felt such an inert, solid-seeming enclosure with any other speaker in our experience. It does not feel in the least like metal, and it is definitely not like wood; solid concrete or stone are the materials suggested by this test—until one picks it up (an 11-pound concrete block?).

Celestion claims significant audible advantages for the SL600 compared with its sibling, the SL6. Since we did not have the SL6 on hand for comparison, we cannot comment on that. Judged by itself, however, the SL600 is obviously a very fine speaker, with a host of virtues and few faults.

**Circle 142 on reader service card**



**FEATURES**

- Antenna signal booster with three tuned r.f. stages
- Calibrated dial tunes from 87 to 109 MHz
- RF Gain control has range of +30 to -10 dB and switches power

- Unit is automatically bypassed when turned off
- Input and output impedance of 75 ohms (300-ohm matching transformers supplied)
- F-type signal connectors on rear panel
- Noise figure of 4 dB

# MAGNUM 105FM ANTENNA BOOSTER

*Got weak signal problems? This FM antenna preamplifier will boost signals as much as 29 dB.*

**M**ANY of us have experienced problems with weak FM signals that result in noisy stereo programs or even prevent stereo reception entirely. The best treatment for this condition is a high-gain ("sensitive") directional antenna

that can be oriented for best reception from a particular station. Unfortunately, this approach is not always practical, and it may not provide sufficient improvement.

Another solution is an add-on antenna amplifier, or "booster," to increase the signal level to the tuner. Such devices usually provide a fixed gain of perhaps 20 dB across a wide frequency range. Most of them also add enough noise to the signal to cancel out any possible improvement in signal quality from the raised antenna signal. The Canadian-made Magnum 105FM "Power Sleuth" is an antenna booster, but it has been designed specifically for the needs of the FM listener facing difficult reception conditions.

The 105FM's three stages of varactor-tuned r.f. amplification can be tuned to any part of the FM broadcast band with a gain that is continuously adjustable from +30 dB to -10 dB. When the unit is switched off, an internal relay bypasses its internal circuitry, connecting the antenna input directly to the booster's output jack. This is not only convenient for reception when the 105FM's benefits are not needed, but it also makes possible a

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convincing demonstration of the booster's contribution to the system's sound.

The Magnum 105FM is housed in an attractive oak-veneered wooden cabinet. It is 9¼ inches wide, 7½ inches deep, and 3¾ inches high, and it weighs 5 pounds. The self-powered unit consumes 10 watts from a 115-volt line. Price: \$229. Magnum Electronics Ltd., Dept. SR, 8 Strathearn Ave., Unit 9, Brampton, Ontario, Canada L6T 4L9.

## Lab Tests

To measure the gain of the Magnum 105FM, we connected it between the output of our laboratory FM-signal generator and the antenna input of an FM tuner. With the 105FM off, we measured the generator output at the 101.5 MHz needed to produce a reference indication on the tuner's signal meter. Then we turned the booster on and measured the r.f. signal level needed to produce the same meter reading at several settings of the booster's RF GAIN control. At the "10 dB loss" minimum setting there was a loss of -8.7 dB, at the indicated "0 dB" setting a loss of -2.7 dB, at the "12:00" setting a gain of +26.9 dB, and at the maximum setting there was a gain of 28.8 dB. For each measurement, the booster dial was carefully tuned for a peak reading.

The tuned circuits of the 105FM, rated by the manufacturer at 600-kHz bandwidth, are very selective, and we judged their effect on interference reduction by measuring the alternate-channel selectivity of the tuner with and without the booster in operation. The improvement was an impressive 22 dB. We attempted a similar measurement of image rejection, but with the booster running the image rejection was beyond our measurement limit of better than 100 dB.

Actual use tests were made with the same tuner used for the measurements (an older model with undistinguished performance by current standards) as well as with a newer, highly sensitive receiver. Several types of indoor antennas were used as this was the only way to find signals weak enough to benefit from the added gain of the 105FM.

## Comments

In general, we have not found boosters to be beneficial in the high-density, high-level signal area around New York City. Weak signals are not a problem here, and a booster cannot alleviate multipath conditions. However, we managed to find a number of signals too weak to unmute the tuners reliably without aid, and in every such case the 105FM brought in a listenable signal, often in stereo. None of these were what one would call "quiet," though, and they had an always-audible background hiss (switching the tuners to mono often resulted in a satisfactorily low noise level).

When the unaided signal was of reasonable stereo quality, with only a moderate hiss level, the Magnum 105FM only sometimes made a worthwhile improvement. In fact, it could add noise to an already quiet

***The weaker a signal the more useful the Magnum 105FM's booster action is likely to be. . . . a dialable "loss" of up to 10 dB and highly selective circuits help to block interference.***

signal. Apparently its low 4-dB noise figure still represents enough added noise to degrade a normally quiet stereo signal, even with an older tuner. This is not surprising; indeed, from our previous experience with boosters, we expected it.



The selectivity of the 105FM was obviously great. A slight detuning of its dial could make the difference between clean reception and hopeless interference from a nearby channel. This property was demonstrated most impressively by our measurement of alternate-channel selectivity with and without the 105FM on line. The unaided tuner had a reasonably good selectivity of 73 dB, which was increased to a very good 95 dB when we used the 105FM. And, as we mentioned, the 105FM effectively eliminated any possibility of image response.

The Magnum 105FM is certainly the best FM antenna booster we have seen. While no booster can be a panacea for all reception problems, it can be quite useful in certain circumstances. The weaker the signal, the more useful its booster action is likely to be. Furthermore, the availability of a dialable "loss" of up to 10 dB in conjunction with its highly selective circuits should help the 105FM to reduce or eliminate interference from strong local signals. Even listeners in strong signal areas may therefore find its interference-rejection abilities to be useful.

The literature for the Magnum 105FM stresses the importance of using a good antenna system. Recognizing that not everyone is in a position to install such an antenna, Magnum also markets two unusual antennas suitable for limited-space installations. The DX Silver Ribbon (\$34.95) is a tunable rabbit-ear antenna whose steel-tape elements are extended or contracted in equal lengths by turning a knob. It is usable for TV as well as FM reception. The ST-2 (\$79.95) is a whip antenna like those used for CB radios. A half-wavelength long, it requires no "ground plane" system for proper operation. It comes with a length of coaxial cable fitted with a connector that plugs directly into the 75-ohm antenna input of a tuner or the 105FM booster. Although Magnum claims that the ST-2 has more gain than a dipole, this seems questionable. But it certainly worked well for us in an indoor location, and it should be an excellent performer if installed outside at a reasonable height.

**Circle 143 on reader service card**

# MARANTZ CD-54 COMPACT DISC PLAYER

*Digital output filters and separate digital-to-analog converters make this CD player a likely choice for the audiophile.*

**M**ARANTZ'S CD-54 second-generation digital Compact Disc player is a limited-frills, moderately priced model with optional remote control and state-of-the-art audio output circuitry. A glance at the list of features shows that while it is programmable, its facilities for user-sequenced playback are not as extensive as those available with other, generally more expensive players. It allows cueing by track number, but, unlike many higher-priced players, it cannot cue by time or by prerecorded index number.

On the other hand, the player does offer digital (linear phase) output filters and separate digital-to-analog converter integrated circuits for each channel. These features are said by some to improve the sound of a CD player.

The CD-54 is also designed for remote control by optional Marantz accessories, the AT133 audio timer and the RMC-10 infrared remote control (which can also control



## FEATURES

- Drawer loading mechanism
- Digital output filters
- Separate left- and right-channel digital-to-analog converters
- Programmable to play back or to skip up to 24 selections in any order
- Programming and cueing by track number only
- Display shows current track number
- and either elapsed playing time (on current track) or the time remaining on a disc or in a programmed sequence
- Skip to next track/selection function
- Repeat track/disc function
- Pause, stop, play, fast-forward and fast-reverse controls
- Can be hooked up to a Marantz remote-control unit or to other Marantz components for automated switching

other Marantz audio components). In addition, through its "Easy Bus" output terminal, turning on the CD-54 can automatically switch it to its appropriate input jacks.

The player is finished in satin gold, matching the appearance of other Marantz components. It is 12 $\frac{3}{8}$  inches wide, 11 $\frac{1}{2}$  inches deep, and 3 $\frac{1}{2}$  inches high, and it weighs 14 pounds. Price: \$649.95. Marantz Co., Inc., Dept. SR, 20525 Nordhoff St., Chatsworth, Calif. 91311.

## Lab Tests

Because of the twenty-four-selection programming limit of the Ma-

rantz CD-54, most of our measurements on the player were made with Philips test records (other test records, those by Sony and Technics, have more tracks that cannot be easily accessed).

The performance of the CD-54, like that of other CD players, was near the limits of our measurement capability. However, in two respects it surpassed most others we have tested. The channel separation, which on most CD players decreases at the highest frequencies because of interchannel capacitance in the analog portion of the equipment, was exceptional. It was an outstanding 120 to 125 dB at low and middle frequencies, and it was still about 104 dB at 20,000 Hz! Although this high separation really has no audible significance to the user (most recordings have far less separation), it is nonetheless an impressive achievement.

The second unusual measurement was the phase shift between

## HIRSCH-HOUCK LAB MEASUREMENTS

Maximum output level: 2 volts  
 Total harmonic distortion at 1,000 Hz: 0.0041 per cent referred to 0 dB; 0.008 per cent referred to -10 dB; 0.037 per cent referred to -20 dB  
 Intermodulation distortion: 0.007 per cent at 0 dB; 0.051 per cent at -20 dB  
 Signal-to-noise ratio: 98 dB A-weighted  
 Channel separation: 125 dB at

1,000 Hz; 104 dB at 20,000 Hz  
 Frequency response: +0, -0.4 dB from 20 to 20,000 Hz (see graph)  
 Cueing time: 3.5 seconds  
 Impact resistance: B  
 Cueing accuracy: A  
 Defect tracking (figures are size of the largest defect successfully tracked): signal surface damage, 900 micrometers; painted dots, 800 micrometers; simulated fingerprint, pass

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*ROAD & TRACK* September 1983  
Fiero prices start at just \$7,999\* Even at \$8,499\* (Fiero Sport Coupe shown), Fiero takes its rightful place among the great cars of the world. The mid-engine Pontiac Fiero: practical, durable, economical\* and flat-out exciting — only from Pontiac!

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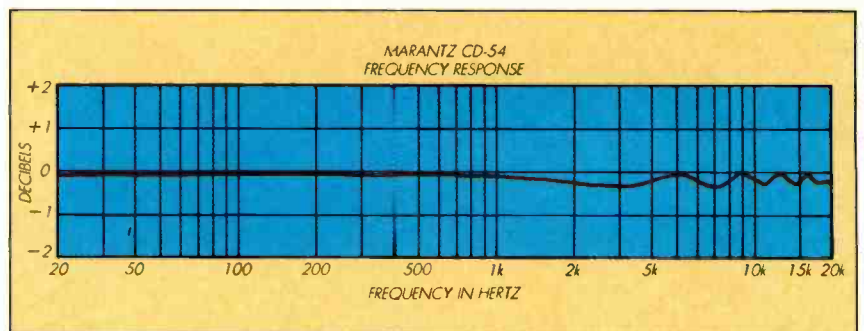


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channels. Many CD players use a single digital-to-analog converter, which is rapidly switched between channels. This normally results in a slight time difference (on the order of microseconds) between the two outputs, which appears as an inter-channel phase shift increasing with

***The Marantz CD-54 Compact Disc player displayed excellent error-correction and tracking abilities. The cueing-accuracy test was performed to perfection.***

frequency. The CD-54 uses two separate D/A converters, and its inter-channel phase shift was only 1 degree at 5,000 Hz and 5 degrees at 20,000 Hz (as compared with 70 to 90 degrees at 20,000 Hz for most switched systems). The square-wave



output of the player also indicates that it uses an over-sampling decoding system with digital low-pass filtering to reduce ringing at high audio frequencies. Again, there is no firm evidence linking these qualities to audible characteristics of a CD player.

The Marantz CD-54 has excellent error-correction and tracking capabilities. The calibrated flaws on the Philips TS4A test disc were played with no audible signs of mistracking. The player's resistance to impact (by the hand to the top, side, or front of the unit) was good but not quite as outstanding as its playback error correction. We also found that tilting the player about 10 degrees from the horizontal, along any axis,

was sufficient to cause it to mistrack and soon stop playing.

The cueing accuracy of this machine was demonstrated by the way it handled the transition between two bands on a Philips sampler disc that have no silent interval between them. Most CD players tend to clip the first syllable of the vocalist on the second selection, but the CD-54 performed perfectly in this test.

## Comments

The Marantz CD-54 provides yet another example of how the newer generations of CD players can outperform even the most expensive first-generation models. The sonic "improvements" between players (if they exist at all) are insignificant compared with the improved error correction and general disc-tracking qualities of the newer models, of which the CD-54 is a good example. Despite its sensitivity to tilting (which would not be a factor in most stationary installations), the Marantz player was generally non-critical in its operating requirements. We did miss the ability to skip immediately back to the start of the current track.

The programming system used on the CD-54 is somewhat different from what we have seen on most other CD players, but it is easy enough to use with a little practice. Even the limitation to twenty-four selections is of no consequence to a user, since no music discs we have seen (other than samplers) have even that many tracks. The additional interface possibilities of the CD-54 with the Marantz timer and remote control may be especially interesting to some people, but the player is perfectly usable with any type of system components.

**Circle 144 on reader service card**



*"... Of course, you know me, I never buy those sensational tabloid weeklies, but a chap next to me on a flight to L.A. last week was reading one and I noticed this rather well-written item about a CD player whose laser beam went berserk and disintegrated a family of five along with their pet dachshund someplace in England... Uh, you might pass this along to all of our salesmen and distributors, Marty..."*

# CAMEL LIGHTS

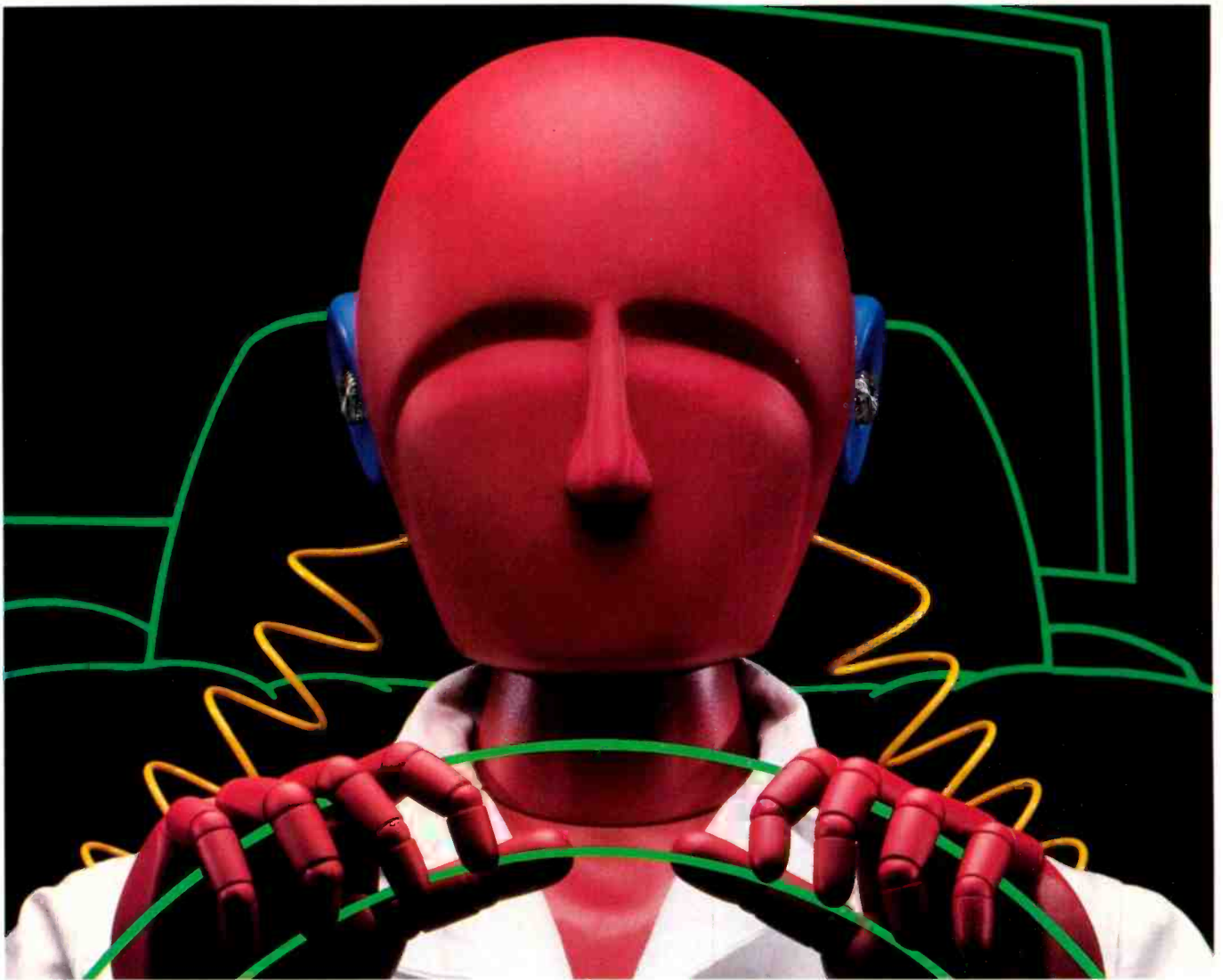
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9 mg. "tar", 0.8 mg. nicotine av. per cigarette by FTC method.



**"Ever since I matched a Delco-GM/Bose Music System to each GM car, nobody calls me a dummy."** *Morgan*



Morgan helps us design a different Delco-GM/Bose Music System to match the acoustics of specific GM car models, each with four individual speaker/amplifier modules.

"Many people ask me, 'Morgan, why bother to match a different music system to each individual car model? Can it truly improve sound that much?'"

"I don't say a word. I simply point to an ever-growing collection of rave reviews."

"**Stereo Review** characterizes an automobile with a Delco-GM/Bose Music System as a 'sonic paradise.' **Popular Science** says 'the results are fantastic.' And **Motor Trend** calls it 'the one option no one should go without.'"

"Did you know this is the first time a car and music system have been designed as one?"

"That's because until I was created, determining the acoustical differences from car to car was hopelessly complex, and understanding the listening space is an essential ingredient of this music system."

"You see, I've been blessed with an acoustic computer brain that allows me to speak a

language all my own—'INTERVAL' (that stands for Interpretive Visual Analysis Language).

I can draw pictures of sound the way humans hear it. So engineers can design a custom music system for specific models of Cadillac, Oldsmobile, Buick and Chevrolet."

"Does matching music systems to cars really make a difference? I simply refer you to what I recently read in **Popular Mechanics**, 'you have to hear it to believe it.'"

"I invite you to visit your GM dealer and let your ears decide. Mine already have."

*Morgan*  
Born in 1959 at M.I.T. Morgan is a vital member of the Delco-GM/Bose Design Team.



Sound so real it will change how you feel about driving



by Christie Barter and Steve Simels

**T**HE first annual MTV Video Music Awards ceremony, to be held at Radio City Music Hall in New York, is scheduled for national telecast on MTV Friday, September 14. Hosted by Atlantic Records' Bette Midler and entertainer Dan Aykroyd, the show will feature live entertainment by awards nominees and other prominent rockers and will spotlight the year's best in music video. □

**I**N the ongoing round of musical chairs, several orchestras announced the departure of their conductors during the summer. Among them was the Min-



Midler: a host of stars for MTV awards

ATLANTIC RECORDS

**D**ID you know that Wendy O. Williams, the former Plasmatics lead singer who used to attack Cadillacs with a chain saw as part of her stage act, was once a scholarship winner at the prestigious Eastman School of Music? Neither did we until we read her official bio, but in any case Wendy has moved on. Her new album, appropriately titled "WOW" (Jem/Passport), is produced by heavy-metal maven Gene Simmons of Kiss. "My ambitions are modest," says the demure Williams. "I just want to be the loudest, heaviest, most aggressive female singer in the history of rock-and-roll." And if you don't like it, be discreet. She probably still has that chain saw. □

rent summer season as a result of disciplinary problems he was encountering with orchestra members. □

**S**ILLY SEASON UPDATE: Slipping into something comfortable between the takes wasn't easy for the members of Queen during the taping of *I Want to Break Free*, the second video from the group's current hit album, "The Works." It's a bit of a job getting in and out of drag at the drop of a hat(pin). That's bassist John Deacon below doing a splendid imitation of Mother Riley (star of a long-running English B-movie comedy series). Since prophecies in the Sixties that rock would cause the British Isles to sink

giggling into the sea remain unfulfilled, Queen's antics may not signal the end of Western civilization as we know it after all. □

**G**UIDANCE offered to VCR owners in a recent issue of *New Video* magazine includes various lists of movies available on prerecorded video tape. The list of films that are so bad they're funny contained such titles as *Invasion of the Bee Girls*, *Glen or Glenda*, *Geek Maggot Bingo*, and *The Terror of Tiny Town* (the only all-midget Western movie musical). To our surprise the list also included *Yes, Giorgio* with superstar operatic tenor Luciano Pavarotti. □

**T**HIS month PBS will televise two of Puccini's greatest operas, *Turandot* and *Tosca*, in performances taped at the arena in Verona, Italy. With Bulgarian soprano Gena Dimitrova in the title role, *Turandot* will be shown (for the first time on U.S. television) Saturday, September 8, at 8 p.m. At the same time the following Saturday, September 15, *Tosca* will be aired with Hungarian soprano Eva Marton in the title role. The presentations are made possible by a grant from J.C. Penney. □



Marriner: moving out

PHILIPS RECORDS

nesota Orchestra, which is losing Neville Marriner, a champion maker of recordings. Marriner agreed to extend his contract with the orchestra through May 1986, but he will then step down as its music director and step up the time he gives his European assignments.

The Berlin Philharmonic announced that it was ending the "private arrangement" it has had with its conductor for life, Herbert von Karajan. The veteran conductor had refused to direct the orchestra at a concert in Salzburg. . . . John Williams announced that he was quitting the Boston Pops at the end of the cur-



Queen's Deacon: dressing up

CAPITOL RECORDS



Williams: moving on

BUTCH STAR/PUBLIC 1

**T**HE first releases in the Metropolitan Opera's new laser videodisc series, co-produced by Pioneer Artists and due in stores this fall, are Donizetti's *Lucia di Lammermoor* with Joan Sutherland in the title role and Verdi's *Don Carlo* with Placido Domingo. These videodiscs are the start of a long-term project that will present in Pioneer's upscale format a number of operas from the current Met reper-

toire as well as performances of historical importance.

Also scheduled are releases from the "In Concert at the Met" series and this year's Centennial Gala. *Lucia* was videotaped live and in stereo in November 1982, *Don Carlo* in March 1983 (with digital audio). Both will be CX-encoded and will sell for a suggested list price of \$49.95 each.

The Metropolitan Opera Guild, meanwhile, is working on a new series of recordings documenting "One Hundred Years of Great Artists at the Met." Each volume will be a two-record set covering a specific period in the history of the company, the first being "The Johnson Years: 1935-1950." A payment of \$19.98 (plus \$2.50 postage and handling)



J. HEFFERNAN/METROPOLITAN OPERA

**Sutherland plays Lucia**

for "The Johnson Years" will enroll you as a subscriber. Subsequent volumes will be sent you every two months thereafter, with an invoice for the same amount. Address: Met Record Series, 1865 Broadway, New York, N.Y. 10023. □

**S**ILLY SEASON UPDATE (Part Two): Here's proof (as if any were needed) that this Culture Club mania is getting out of hand. The two gentlemen on the motor scooter are none other than country stars **Moe Bandy** and **Joe Stampley**, posed to promote their new Columbia single *Where's the Dress?* (obviously the beginning of the Good Old Boy George look). And if that weren't enough, the



CBS RECORDS

**Moe Bandy and Joe Stampley: Where's the Dress?**

irrepressible zanies at Rhino Records have just unleashed a four-song EP by **Kosher Club**, featuring **Oy George** warbling *Yes, I Really Want to Hurt You*. The EP also features performances by **Gefilte Joe and the Fish**, the world's only (to our knowledge) senior-citizen rock band. □

**R**EGARDED as America's first important classical guitarist, **Christopher Parkening**, thirty-six, has had a phenomenal career on records as well as in concert halls. His recordings for Angel made in the late 1960's and early 1970's have remained among that label's best sellers. His biggest hit has been the album "Parkening Plays Bach," and he says, "It's hard to find anything more beautiful to listen to than Bach." □



ANGEL RECORDS

**Parkening plays Bach**

Having made few records in recent years, **Parkening** was back in the Angel studios this summer, and his first new record will be another all-Bach album. It should be out in time for Bach's three hundredth birthday celebrations in 1985. □

**G**RACENOTES: Thorn/EMI Video is readying the followup to its spectacular *Ready Steady Go* tape (based on the legendary English TV rock show of the Sixties). The soon-to-be-released Volume Two includes live clips of the **Beatles** singing *Twist and Shout* and *She Loves You*, the **Rolling Stones** stomping through *Satisfaction*, the late **Marvin Gaye** with *Can I Get a Witness?*, and lots more from the likes of the **Beach Boys**, **Dusty Springfield**, **Gene Pitney**, **Brenda Lee**, and **Martha and the Vandellas**. . . . The **Ventures**, a legendary Fifties surf band whose instrumentals have influenced nearly every rock band around, are celebrating NASA's twenty-fifth anniversary with a commemorative album on Award Records. Included are appropriately spaced-out versions of themes from *Star Trek* and *Star Wars*, as well as *Theme for Sally*, a tribute to America's first woman as-

tronaut. . . . **Chevy Chase** and **Goldie Hawn** are actually set to star in *The Jetsons*, a live-action film version of the old Hanna-Barbera sci-fi cartoon comedy. . . . The long-awaited **Mick Jagger** solo album is actually being recorded in the Bahamas. Production is being handled by avant-jazzier **Bill Laswell**, which may mean a more contemporary musical direction than Mick usually takes with the Stones. . . . □

**W**HAT is video coming to? Not likely to be included in the video collections of the Whitney Museum or the Museum of Modern Art is a new MCA Home Video release called "Party Games—For Adults Only." □

On two discs, it includes



PIONEER ARTISTS

**Adults play games**

sixty games explained by host **John Byner** and demonstrated by his good-looking, uninhibited guests. Among the games are Dictionary, Blow It, Ride 'em Cowboy, Cucumberisms, and Tickle His Fancy. The set is designed to exploit such features of the LaserVision system as frame and chapter search, automatic picture stop, and slow motion. Shown here for those who may not know much about art is a frame from Chapter 47, Body Painting. Price: \$49.98. □

● OFF/VOL push: BAL  
○ TRE push: BASS



TUNING ●  
FADER ○



Not for the meek

There are some people who simply can't appreciate all that Sanyo's new FT-E25 car stereo system has to offer.

With 2 or 3 times the power of most car stereos, and hardly a trace of distortion, Sanyo gives automotive sound the

clarity and "sock" it's always lacked. Of course, you get bass, treble, and loudness controls — plus a built-in fader to make the most of 4-speaker installations.

Our digital electronic tuning and

sophisticated FM Optimizer system deliver superb stereo reception without fading or "picket fencing." And besides Dolby B\* it has super-advanced Dolby C\* noise reduction to keep tape hiss inaudible.

Fortunately, we've made it easy to use — with auto reverse, automatic tape and radio search, human engineered controls, and clever illumination that eliminates fumbling in the dark.

A Sanyo auto sound dealer will challenge all your preconceived ideas by putting the FT-E25 (or one of our other new masterpieces) through its paces.

Warning: Sanyo car stereo definitely separates the men from the meek.

 **SANYO**

The modern art of electronics.

CIRCLE NO. 9 ON READER SERVICE CARD

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\*TM Dolby Laboratories



# ***The Future of Audio.***

## ***The Cornerstone of Home Entertainment.***

*by John Geheran*

*Vice President, Sales and Marketing*



Imagine yourself over the last 50 years. In the 1930s you listened to the radio. In the 1950s you began watching TV. In the 1970s you listened with pride to your component stereo.

Now it's 1984. The growth and development of video has provided an enormous increase in the number of choices available to you in both equipment and programming. You probably ask yourself questions like: "Do I want VHS or Beta?" "Should I watch my favorite program now, or videotape it while I watch the playoffs?" But maybe the question you really should ask first is: "How does my audio equipment fit into all this?" You can find the answer by turning down the volume on the nearest TV set.

While video brings new programs onto your TV screen, it's audio that pulls them off the screen and brings them to life in your home. Whether it's a bass drum beating through a classic rock concert, or a space ship whizzing through the latest movie, it's audio that creates the mood, generates the excitement, and sets the pace for what you see. The introduction of new technologies and products such as stereo TV and hi-fi VCRs emphasizes this fact.

The key to exciting, powerful home entertainment then, is an integrated audio-video system. But how can you logically start building a system which lets you enjoy all these new developments?

You know that the cornerstone of your system is the sound. You also know that



your speakers, more than any other component, determine the quality of the sound you hear. The right speakers, then, represent the logical base upon which to build a modern home entertainment system.

At Bose<sup>®</sup>, we've invested 20 years and

millions of dollars to develop and manufacture speaker systems which deliver the impact and excitement of live performance. That investment can now bring movies, concerts, and specials to life in your own living room.

Experience the excitement available from a combined audio-video system. Ask your local Bose dealer to show you the Bose Music Video. Your dealer can also help you decide which components and formats offer you the enjoyment and convenience which best match your lifestyle.

Bose wants to help you learn more about the future of audio, and its contribution to home entertainment. To do so, we're using this year's advertising space to discuss and explain key issues. Knowledgeable experts will share information which helps you get maximum enjoyment from your home entertainment investment.

For more information on Bose products and a list of authorized Bose dealers, write: Bose Corporation, 10 Speen St., Dept. SR, Framingham, MA 01701.



R AT CES

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# FABULOUS NEW PRODUCTS

*STEREO REVIEW's editors pick the most exciting new audio and video products shown at the summer Consumer Electronics Show in Chicago. Look for them in stores this fall. by Gordon Sell*



PHOTOS BY JOHN STUART

**1** In this digital age, most amplifiers are being designed for high-current capability. One of the more interesting is Tandberg's TPA 3006A. It has MOSFET output devices and zero negative feedback, and it is rated for 150 watts per channel into 8 ohms and 235 watts into 4 ohms. Its short-term peak current capability is 25 amps per channel. Price: \$995.

**PRODUCT  
PREVIEW**

**2** The magnets used in many home loudspeakers will deflect the electron beam that puts the picture and the color on a TV screen. The B&W VM-1 uses center-pole magnets and shielded drivers to reduce the external magnetic field. Price: \$149 each.

**3** More and more companies are incorporating AM stereo reception capabilities into their home and car audio equipment. Marantz has included a Motorola-system AM stereo decoder in its top-of-the-line SR 940 AM and FM stereo receiver. The receiver delivers 100 watts per channel and has digital-synthesis tuning, wireless remote control, and a timer. Price: \$640.

**4** Jensen's P/EQ-2 is a 6½-inch car stereo speaker that features active equalization for optimal tonal balance. It has a rated sensitivity of 94 dB SPL, can handle 100 watts of power, and has a mounting depth of only 2 inches. Price: \$155.

**5** Sony has demonstrated two car stereo Compact Disc players that will be on sale some time this fall. The CDX-5 is a CD player only, and the CDX-R7, shown here, also has an AM/FM tuner. Both units are encased entirely in a DIN-sized chassis for easy installation in most cars. They are said to be able to withstand the shock, vibration, and heat of the car environment.

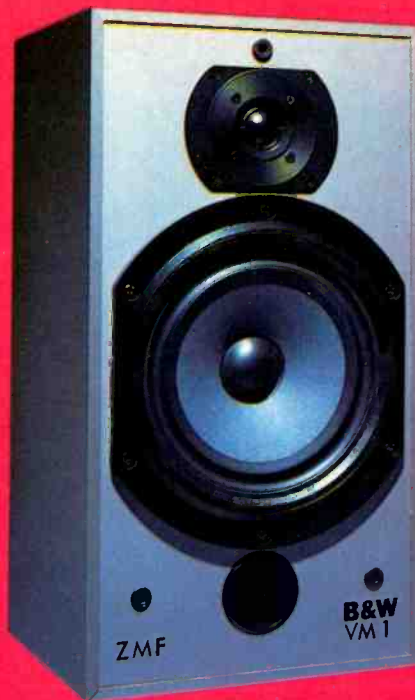
**6** With the growing market for hi-fi video-cassette recorders there is a matching demand for high-quality video tape to go with them.

TDK's Extra High Grade Hi-Fi video tape, available in VHS and Beta formats, is said to improve the audio and video signal-to-noise ratio as well as other parameters.

BASF, Maxell, and others are also offering higher grades of video tape.

**7** Among the dozens of Compact Disc players introduced at the show, one of the most interesting was the \$1,500 Technics SL-P15 CD player changer. Its magazine can hold fifty-one discs for playing in any order with random access to any track. The company plans to sell an accessory that will allow access to 255 discs.

**8** Polk has adapted its SDA (Stereo Dimension Array) technology for use in the compact, affordable SDA Compact Reference Monitor. Each of the two speakers in a system has two sets of drivers, one set for the main left or right signal and another set that cancels the signal from the opposite speaker. The design noticeably improves the imaging. Price: \$790 per pair.





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PRODUCT  
PREVIEW

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**9** NEC was one of a number of companies that demonstrated stereo TV systems at CES. Audio and video manufacturers see stereo TV as the product that will introduce hi-fi stereo sound to millions who have previously ignored it. The 25-inch NEC CT-2501A (\$869), shown here, is a stereo-ready unit that uses an add-on adaptor to decode the stereo TV sound broadcasts. Some limited stereo TV broadcasts may begin this fall. The number of stereo offerings will increase gradually much the way color TV was introduced.

**10** Despite increasing sales of Compact Disc players and cassette decks, the market for high-quality turntables shows no sign of slacking. Denon has reinforced its line of audiophile turntables with the new DP-37F. It has a Dynamic Servo Tracer tone arm for optimal tracking of warped records and sells for \$325.

**11** Pioneer expects to sell a lot of music videos in its new format, a single-sided 8-inch Laser-Disc that holds up to 20 minutes of video and CX-encoded stereo music. The video-disc singles, which list for \$10.99, can be played on any Pioneer or Magnavox LaserVision player. The first two discs, by David Bowie and the Motels, respectively, will be released this month. Two-sided discs, offering 40 minutes total playing time, will be available in the future at a slightly higher price.

**12** The Bose Corporation's Room-Mate transforms a typical pocket portable radio or tape player into a hi-fi system. The RM-1 Room-Mate consists of a pair of speakers with 4½-inch full-range drivers. One of the speakers has a power supply, stereo amplifiers, an equalizer circuit, and a connection for a pocket portable. Price: \$260. Support stands: \$40.

**13** When its flip-down front-panel door is closed, the only part of the Aiwa CT-X500 AM/FM/cassette car stereo unit that is visible is a nondescript plastic rectangle that looks like part of the dashboard. The closed-up unit can be operated by an infrared remote control that snaps into the inside of the door. It also features a digital-synthesis tuner and an autoreverse tape player with Dolby B and Dolby C noise reduction. The price is expected to be around \$500.

**14** The Scintilla full-range three-way ribbon speaker from Apogee Acoustics generated considerable interest among the audiophile contingent of the electronics industry. The extreme low mass of the ribbon drivers is said to improve transient response for excellent clarity and imaging. Many in the audio press informally rated it as one of the best at the show. The Scintilla lists for \$3,500 a pair.

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PRODUCT  
PREVIEW

# CÉCILE OUSSET



EMI RECORDS

*by Christie Barter*

**T**HE French pianist Cécile Ousset, like many artists—and Biblical prophets—is more honored abroad than in her native country. For the last few years she has been enjoying her conquest of England, where she plays frequent concerts and records for EMI, the parent company of Angel Records.

Last February, Ousset received a Record of the Year Award from STEREO REVIEW for her album "French Piano Music" (EMI/Angel ASD 4390). And she has now set forth on a conquest of North America.

Having been enormously impressed when I heard her in London in 1982, I felt privileged to be in Los Angeles this spring when she made her American concert debut with the Los Angeles Philharmonic. I took advantage of

an opportunity to meet her during the rehearsal period and went to see her at the venerable Biltmore Hotel.

She was in excellent spirits as she described rehearsals of Rachmaninoff's Third Piano Concerto with the Philharmonic under the East German conductor Günther Herbig. When I raised the question of her triumphs in England, she burst into peals of delighted laughter.

She spoke quite candidly about the fact that her career has had its downs as well as its ups. She made her London debut with a recital at Wigmore Hall in the early Sixties. "It did not go at all well," she said. "And you know, if you're not in top form and you don't please the critics, you're finished. Finished! So you understand, I was not anxious to return."

Anxious or not, however, she did return to London.

## After some career ups and downs, an award-winning French pianist knocks out audiences and critics from London to Los Angeles.

"It was nearly twenty years later, and this time I played at the Queen Elizabeth Hall on London's South Bank. I opened with Beethoven's Opus 111, his last piano sonata and a tough one under any circumstances. And that really knocked 'em out."

Ousset has been knocking out British and American critics with her records since she was signed by EMI two years ago. In June 1983, David Hall reviewed her album of Saint-Saëns's Piano Concerto No. 2 and Liszt's No. 1 in this magazine. He praised the razzle-dazzle of Ousset's performance and described her as "not only a virtuoso of Horowitzian agility and power, but also a musician with genuine feeling for high Romantic musical utterance."

Two months later in these pages Richard Freed wrote: "With brilliance to burn and a technique so sure it needn't be discussed, Ousset is so impassioned and yet so eloquent in her celebration of the contrasting colors of her varied program that no one whose ears are in working order is likely to be less than simply swept away by the magic of it all."

How could the ears of the record industry have been so deaf for so many years? They weren't totally, Ousset explained. She has about twenty records on the East German label Eterna, but they have not gone much beyond the Berlin Wall to penetrate the West. She has also made several records for French Decca, including the Brahms Second Piano Concerto with conductor Kurt Masur. It won a Grand Prix du Disque but was soon deleted. A unique five-record set of all the Beethoven variations is gone too, which particularly dismays Ousset. "I made a big effort on that one," she told me, "and it really came off beautifully."

Trained at the Paris Conservatory, Cécile Ousset won a *premier prix* there when she was only fourteen years old, and at an early age she set out to try her luck on the competition circuit. "I participated in a lot of competitions," she said, "like the Marguërite Long-Jacques Thibaud, where Arthur Rubinstein heard me and declared I was 'an immense authentic talent.' I was only seventeen at the time.

"The following year, in 1956, I went for the Queen Elisabeth of Belgium. And that was important. It was the year Vladimir Ashkenazy got the first prize, John Browning took the second prize, and the third prize went to me."

Ousset subsequently placed first in Geneva

and first in the Viotti and Busoni competitions as well. "But the Queen Elisabeth really set me up. I did lots after that, playing in Holland, Belgium, all over Scandinavia, and in Germany."

She also made her first trip to America to compete in the first of the Van Cliburn competitions in 1962. "That was [Ralph] Votapek's year. I came in third—again. But that was okay. The next time I was on the jury."

Ousset is philosophical about the fact that she did not become a keyboard superstar in her teens or early twenties. She has continued to work hard and to perform a great deal. Today the pay-off can be heard in the maturity of her playing and the depth of her perception of *what* she is playing.

**A**t present she nominally lives in Paris with her husband of twenty-six years, but she actually spends most of her time in England, where she records and where she currently plays about fifty concerts a year. "I'm playing twelve times in London alone this year," she said. "It's almost too much."

Ousset clearly has enormous stamina for performance, and she continues to reach out musically. "Every year I force myself to learn new things. This year, it's the Liszt Sonata. Next year, the Brahms First Piano Concerto, which I have never played although I think it suits me."

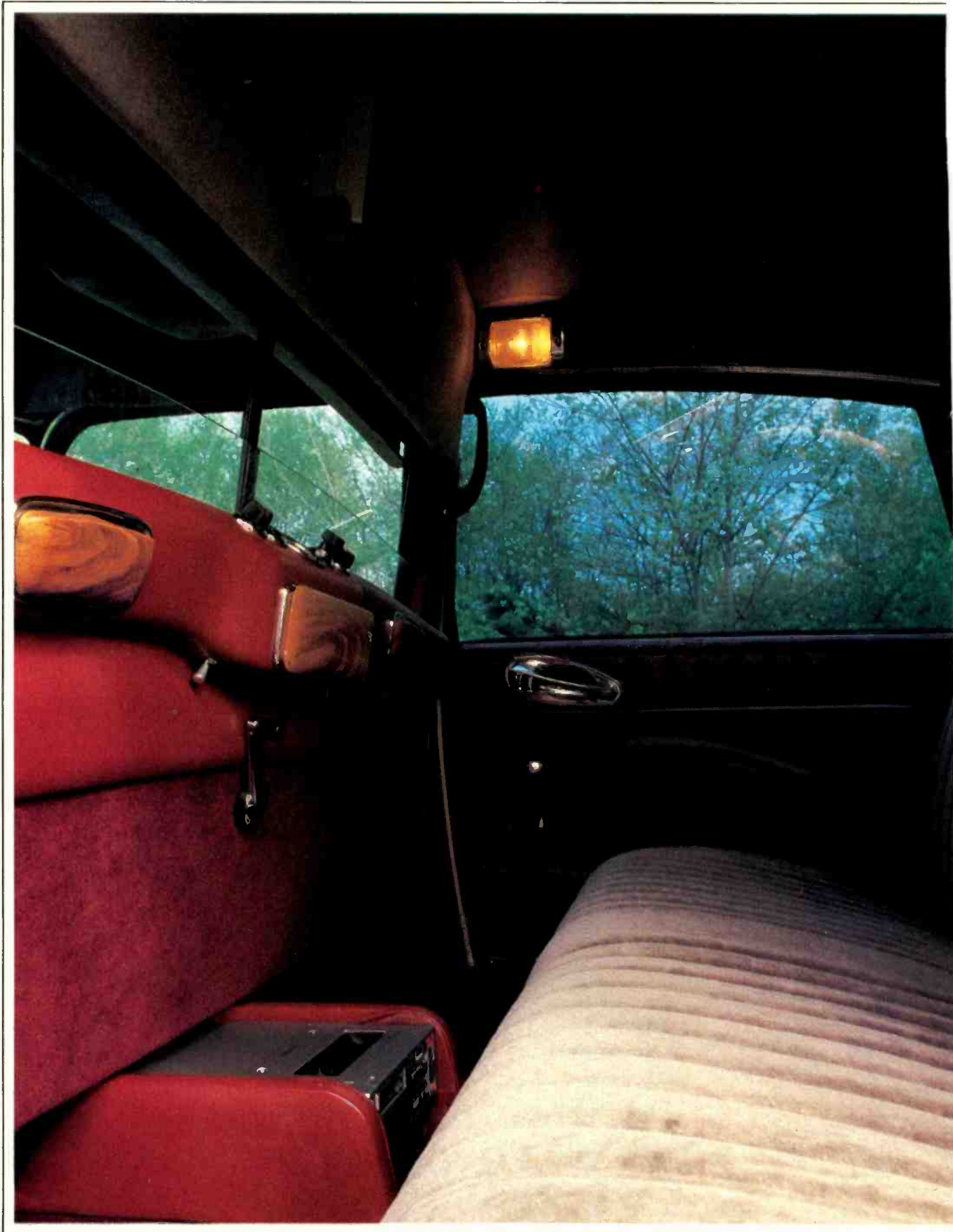
The Liszt Sonata is, in fact, next on Ousset's recording schedule, as is a coupling of the Grieg Piano Concerto and the Mendelssohn C Minor with Neville Marriner and the London Symphony. Awaiting release on Angel is her performance of Rachmaninoff's Second Piano Concerto and his Paganini Rhapsody, which she recorded with the City of Birmingham Symphony under Simon Rattle.

When I talked with Ousset, her engagements included a return to Los Angeles for a performance in the Hollywood Bowl during the Olympic Arts Festival. She is also set to return to North America in January 1985 for a number of dates in both the United States and Canada, including a weekend with the Boston Symphony under Masur.

Next May she returns to Fort Worth, where she has been invited to serve once again on the jury for the Van Cliburn International Piano Competition. She said, "Down there I guess they just like to let you know they love you even if you aren't a first-prize winner." □



KEN VEEDER/ANGEL RECORDS



# SYSTEMS



*Remote control keeps a car stereo system under the director's thumb/by Gordon Sell*

**M**OVIE director Francis Ford Coppola (*The Godfather*, *Apocalypse Now*) owns a lot of cars, but his favorite is a jet-black Citroen DS-21 limousine. Since he also likes good sound, he asked Perfection Plus, a car stereo dealer/installer in Paramus, New Jersey, to put together an audio system for the compact French-made limo. In the back, on the driveshaft hump, are a Nakamichi TD-1200 AM/FM tuner/cassette player and a portable Sony Beta VCR (not Beta Hi-Fi yet), and at the top of the front-seat partition is a Sony 8-inch color TV attached to the VCR and a roof antenna. The sound from all the sources is switched through the car's extensive network of amplifiers and speakers—two Sony L-20

subwoofers and three pairs of ADS 300-I speakers (one pair for the chauffeur), two ADS P-120 Power Plate amplifiers, a Sony XM-120 amplifier, and a Blaupunkt BPA-260 amplifier.

The most interesting thing about the system is the installation of a Blaupunkt Houston AM/FM/cassette unit in the glove compartment. The Houston normally has a front-panel "eye" for an infrared remote control. Perfection Plus removed the eye (thus voiding the warranty) and mounted it on the dashboard to enable either the driver or a rear passenger to operate the Blaupunkt with the remote control. Each compartment has a Blaupunkt BE-55 graphic equalizer for optimal tonal balance. The whole system, which took 125 hours to fabricate and install in the Citroen, cost \$10,000. □



# SPEAKER CITY

*In today's densely populated speaker market, how do you find the one that's right for you?*  
by Ian Masters

**T**HERE we were, two enthusiastic young audiophiles preparing for the sonic experience of our lives. In response to a newspaper ad, we had rushed to a nearby hi-fi store for a demonstration of *the* ultimate stereo system, and we were now sitting in an opulently appointed listening room regarding with awe a pair of speakers the size of Oldsmobiles (and carrying price tags to match). This definitely had to be *it!*

A serious-looking brute of an amp twinkled from a table at the side of the room as the store owner chose a record and prepared to blow us out of our seats. The stylus settled into the groove, and the first few notes thundered by us. Then a few more. My friend and I listened intently, then looked at each other.

*These speakers sounded . . . terrible!*

At the time, we thought that we must in some way have misunderstood what constituted good sound. After all, speakers that big, that expensive, from that manufacturer just *had* to be good. But I have had occasion to hear those monsters often in succeeding years, and my original reaction has been confirmed every time. It illustrates one of the cardinal facts of audio: speaker quality has *nothing* to do with price or size or promotional hoopla.

Ironically, a speaker is both the simplest and the most problematical of audio components. It's simple in that there is really not much to it, physically—barring a few exotic units that test the limits of technology, a speaker system generally consists of a wooden box of straightforward construction with a small number of individual drivers (usually two or three) mounted in one surface and with some packing inside to keep the sound from rattling about. Since the drivers themselves are of different sizes and characteristics, to handle different parts of the audio spectrum, most speakers include a rudimentary bit of electronics called a crossover network to direct the signals to their appropriate drivers.

This apparent simplicity is one of the main reasons there are so many speaker companies out there. Gearing up to produce speakers is a lot easier and less costly than making something as complex as



PHOTO: RON MOORCRAFT





a receiver or as miniaturized and precise as a phono cartridge, so the vast majority of small audio companies make speakers, and the hi-fi component offering the widest range of choices is the speaker.

In spite of its uncomplicated physical nature, however, the speaker presents a host of problems for designer and buyer alike. In the first place, electromechanical devices are notoriously nonlinear—they tend to want to turn some electrical signals into physical motion more than others. Similarly, the box in which the speakers are enclosed tends to emphasize some frequencies. Extremely careful design and manufacturing can overcome these and other problems, but such care is applied in varying degrees from company to company.

A major stumbling block is a lack of agreement as to what exactly a speaker should do. Obviously it has to turn an electrical signal into an acoustical one, but just what constitutes a perfect conversion—or, indeed, which compromises are acceptable—has been controversial since speakers were invented. The situation is certainly not helped by a general lack of consensus as to the correct way to measure a speaker's performance. A number of different methods exist, each with its supporters, and they can produce radically different results from the same speaker. No one can really say that one set of figures represents a speaker's sound more accurately than another. So even if we knew what a perfect speaker should do, we wouldn't know if a given speaker was doing it.

But all of this recedes into the

**S**peaker design does not constitute some sort of "black art," but speakers do vary widely in performance because so many compromises and assumptions go into their design.



background when we bump into the fact that a speaker, good or bad, is only one half of an acoustic system. The other half is your listening room, and it has at least as much effect on sound quality as the speaker itself. Unfortunately, all rooms are different, and every position of both speaker and listener in any given

room affects the sound differently. The speaker designer has no way of predicting where and how his products will be used, so he must make some arbitrary choices in the hope that the ultimate buyer will at least come close.

## Narrow Your Choices

All of these variables have given rise to an extensive mythology about speakers, the result of efforts to impose some consistent rules on an inherently inconsistent field. Speakers do not constitute some sort of "black art," but they do vary widely in performance because so many compromises and assumptions go into their design. But all of this diversity means that out there, somewhere, is the speaker that is perfect for your needs. Finding it among the hundreds of models available is no easy task, but it's not impossible.

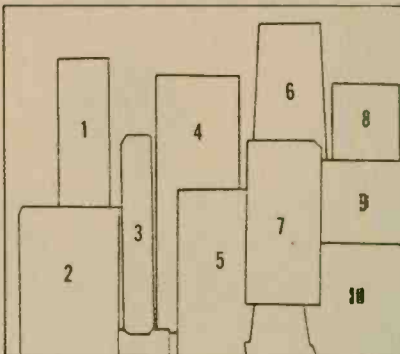
First, you must be methodical about it—with such diversity in the market, a haphazard approach will almost certainly lead to a less-than-perfect choice. A somewhat negative approach, by which you gradually eliminate the unsuitable candidates, is probably the best.

Start with price, as that is a pretty poor indicator of quality. You can safely ignore speakers you cannot afford without fear that you are sacrificing good sound—there are superb and dreadful speakers at all price levels. If status is important to you, by all means pick a price range that satisfies that requirement, but be assured that you can still get first-class performance without mortgaging your grandmother. In any event, setting a realistic budget will narrow your range of choices substantially.

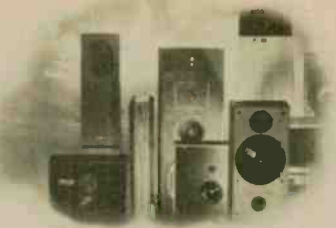
When considering price, it's only sensible to take into account what discounts are available, but bear in mind two things: on the plus side, speakers are pretty hardy if you don't abuse them, so any sacrifice in potential service you might have to make in order to get a really good deal might well be worth it; on the other hand, you never really know whether or not a speaker is right for you until you get it home and try it

**Speaker City—key to photo on preceding pages (all prices per pair)**

1. Allison:Seven, \$450
2. EPI T/E320, \$500
3. BES SM275 (side view), \$950
4. Acoustic Research AR9LS, \$1,800
5. Boston Acoustics A150, \$590
6. Ohm Walsh 2, \$750
7. Mission 770, \$799
8. B&W DM2000, \$1,300
9. Belle Klipsch, \$2,038
10. Bose 501 Series IV, \$684







out in your own listening room, so it may make sense to spend a few more bucks with a "standard" retailer if he will let you exchange a speaker that doesn't satisfy you. Few, if any, discount houses will accommodate you that way.

### ***Beware the Unknown***

Once your budget is set, give some thought to acceptable brand names. No manufacturer's name is an absolute guarantee of quality, but it can still tell you a good deal about a product and help you narrow the field further. If nothing else, you can eliminate brands that are not readily available in your area—not a major consideration in the larger cities, where virtually all brands are to be found, but possibly important if your selection of local retailers is limited.

As a general rule, it's best to consider brands you know something about, either through the audio press or from friends who have had some experience with them. In fact, if a fellow audiophile owns a particular pair of speakers that he swears by, try to borrow them—if they sound as terrific in your room, your quest might end right there.

Audio salesmen can give you some good guidance when it comes to speakers, but approach such advice with caution unless you are absolutely sure he is being straight with you. A dealer's reasons for promoting a given brand may have little to do with its inherent quality—profit margins, inventory levels, and sales incentives are factors for him but are entirely irrelevant to you. Also, it may be in his interest to try to sell you a "house brand" speaker. Some of these can be very good, but many are not, and you will have no clue from national reputation or product reviews as to whether such a speaker is any good. Many (perhaps most) house speakers bear names that sound like they could be national brands, so it's sometimes hard to identify them. If a given brand is available at more than one store, it's probably not a house brand.

One other minor point might be

***A dealer's promotion of a given speaker may have little to do with its quality—inventory levels, profit margins, and sales incentives are factors for him but are irrelevant to you.***



taken into account when looking at possible brands: a speaker's regional or national origin. At one time, speakers designed and built in certain parts of this country exhibited marked regional "sounds"—a rather "polite" or "classical" sound in New England speakers, a more forward, "rock" sound in California products, and so forth. There is much less of this now than there used to be, but it might still be a factor if you are considering buying an older pair of speakers.

The emphasis has shifted. Now different countries tend to produce speakers with national sonic characteristics, the most notable probably being that of Japan, exhibited by many (but certainly not all) of the speakers from that country. Such a sound might be to your taste, but then again it might not, so you

should at least know what you are getting. Note, however, that not all speakers with, say, a Japanese brand name actually come from Japan—many are made on this side of the Pacific, particularly at the lower end of the price scale, and these may or may not have the "Japanese Sound." In any event, it's a simple matter of economics that speakers are expensive to ship over long distances, so a domestic speaker is likely to be cheaper than an import of similar quality.

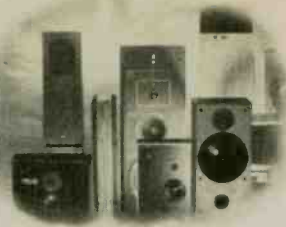
Determining acceptable brands, availability, and price should narrow your range of choices to a manageable number. But there's still a wide selection, and to narrow it still further you will have to start examining specific models to see what they are and what they do.

Some physical considerations are fairly easy. Size, for example—speakers the size of refrigerators are obviously inappropriate if you live in a small apartment; mini-speakers are unlikely to be satisfactory in a ballroom. Similarly, you should not really ignore the cosmetic aspects of a pair of speakers; they will be part of the furniture in your listening room, and even if you are willing to live with a particularly bizarre-looking device in the interests of good sound other members of your household may not be. Fortunately, most speakers, including many of the best, are fairly unobtrusive.

### ***Technicalities***

Eventually, you will have to come face to face with some technical aspects of speakers, a task made particularly tricky by the fact that many of the specifications quoted for speakers are meaningless. Manufacturers publish specs because people expect them, but they tell you practically nothing about how a speaker will perform. In the first place, there are no standard measuring methods, and there is very little agreement about the interpretation of such measurements as are commonly made.

Frequency response, for example, is probably *the* significant spec for all types of audio equipment. But if



speakers were specified on the same basis as, say, amplifiers, the numbers would horrify most buyers. If a single-tone sweep is used—common enough elsewhere in audio—a good speaker might have a frequency response something like “60 Hz to 15 kHz  $\pm$  20 dB!” A quick look at the spikes and dips of such a curve will show why this should be. On the other hand, if third-octave bands of pink noise are used, the curve will be much smoother, but at considerable sacrifice of possibly important information.

Nevertheless, frequency-response curves can be useful, as long as you look at the curves themselves rather than a single-number spec. If you ignore the peaks and valleys of the curve and observe only the trend, it is often possible to predict the general character of a speaker—whether it is “bright” or “muted” or whatever. A sag or lump in the midrange can say quite a bit about coloration, and a comparison of on- and off-axis curves can be a good indicator of dispersion. But frequency-response curves, however obtained, can only be the roughest of guides—in the long run, it's better to trust your ears.

Most other things commonly specified are completely irrelevant. Number of drivers, crossover points, free-air resonance, and even enclosure type are of interest primarily to the manufacturer and say nothing whatever about sound quality. Excellent speakers exist in virtually every configuration, as do bad ones.

The one thing you should take into account, however, is a speaker's efficiency or sensitivity—the amount of sound it pumps out for a given signal level from the amplifier. The larger your listening room, the louder you like your music, and the “deader” your furnishings, the more acoustic power your speakers will have to produce. You can always buy a larger amplifier, of course, but a more efficient speaker will accomplish the same thing, sometimes for fewer dollars. And since you are far more likely to damage a speaker by under-powering it rather than over-powering it,

**P**rice is a pretty poor indicator of quality. You can safely ignore speakers you cannot afford—there are superb and dreadful speakers at all price levels.



an efficient speaker can give you a margin of safety to prevent damage. On the other hand, some speakers sacrifice overall sound quality to gain efficiency, so you should never use efficiency as your sole criterion. Again, listening to the speaker for yourself is the key.

### **The Final Choice**

Having whittled away at your list of possible speakers, you should now have eliminated all but a handful, so it finally comes time to make the final determination by ear. Virtually every retailer has some sort of listening room, ranging from superb to ridiculous; before you can reliably choose a speaker, you must

choose a store, or group of stores, in which to do your listening.

You will never encounter a perfect listening environment, but try to find one that is about the same size and shape as your own listening room, and in which the speakers you want to audition are placed approximately where they would be in your room and/or where the manufacturer recommends (some dealers will move speakers around for you, some won't). Make sure that there are not too many speakers in the room, and that there is some way for levels to be equalized during comparisons—speakers only a tiny bit louder tend to sound better. Take your own records along, both so you will be familiar with what the music should sound like and so that the demonstrator doesn't use particularly flattering records. Listen to two or three speakers at a time (switching back and forth, of course), and, if possible, try to compare all your possible choices with all the others somewhere in your travels. Most of all, *take your time*—do a lot of listening and make sure you are getting what you want.

If you can swing it, get the dealer to let you take your final choice home to try out in your own room. Understandably, dealers *hate* to do this, although if you are buying an expensive enough pair they can sometimes be persuaded. Failing that, make sure you can exchange the speakers if you are not satisfied. If your process of elimination has worked, however, you should not have to do this.

There are no certainties in audio, except that some of the most glamorous speakers are also the worst, and some of the best are very modest. Without question the speaker is the most time-consuming, not to say confusing, component to buy. But your speakers will determine how the rest of your system sounds. It's worth taking the effort to make the right choice—it's worth *lots* of effort, in fact. □

*Ian Masters is a prominent Canadian audio journalist. This is his first appearance in our pages.*

# WHERE'S THE BASS?

by Julian Hirsch

*Three-piece speaker systems offer many advantages, including rock-bottom bass.*

**B**ACK in the days when stereo was first introduced, for most audiophiles the shift from mono to stereo meant having two speaker systems in a setup that had included only one before. There was a lot of discussion about double the cost for speakers that now took up twice as much space, and people began to think that mono means "one" and stereo means "two."

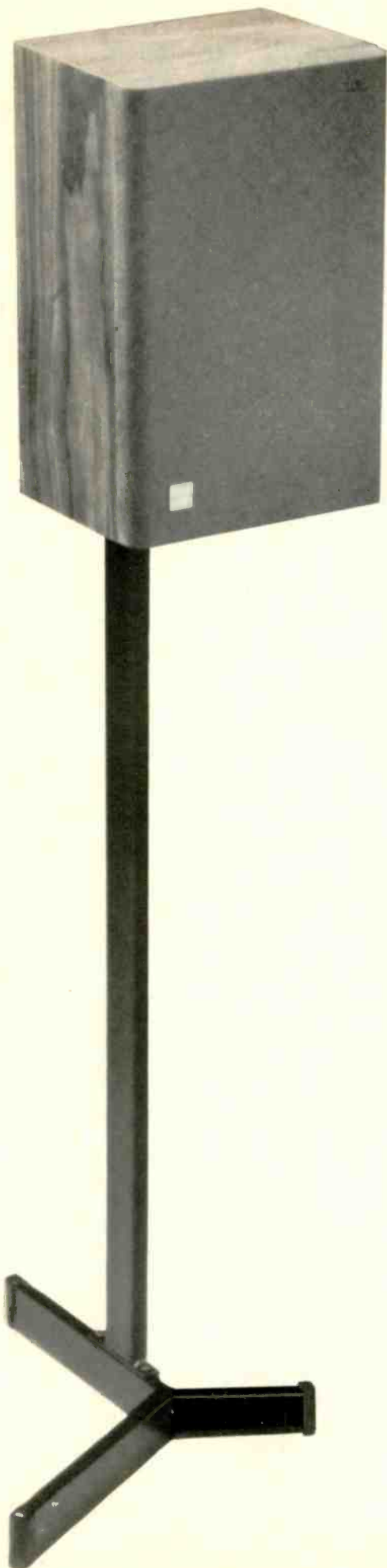
But it doesn't. "Stereo" is derived from the Greek word for "solid," and in the early days an alternate way of getting a solid three-dimensional stereo effect was an arrangement made up of not two but *three* speakers. This consisted of two smaller "satellite" loudspeakers, which carried most of the musical burden, in combination with a bass-only speaker, usually called a "subwoofer,"

which could be placed relatively inconspicuously almost anywhere in the room.

This idea, which is excellent, has not died, and in recent years three-piece speaker systems have gotten renewed attention from manufacturers and consumers. The advantages such systems offer include greater flexibility in installation, superior stereo imaging, and exciting low bass at relatively low cost. I have used a three-piece system quite satisfactorily for a number of years, and I recommend this configuration for many listeners and many listening rooms.

Full-range speakers whose useful response extends to 30 Hz or below are uncommon, and they are usually large and expensive. It is for people who must rule these out for aesthetic or financial reasons that the configuration of satellites plus bass module—or a subwoofer—is most attractive.





Modern satellite speakers are frequently of standard "bookshelf" size or only slightly smaller. Their low-frequency response extends down to 60 Hz or so, and they might be used alone as the main system speakers depending on the kind of music you listen to. But with many kinds of music and on many video soundtracks the next lower octave—down to 30 Hz—is very important for maximum realism, and having it can make the difference between ordinary and really good sound.

This is where the third part of the three-piece system comes in, and it is designed to operate only in the range of 30 to 100 Hz or perhaps up to 150 or 160 Hz. Such bass-only units are often loosely (and perhaps incorrectly) called "subwoofers." In this context I prefer the term "bass module," reasoning that a *subwoofer* is a speaker whose output goes lower than that of an ordinary woofer, not simply a speaker that acts as a woofer separated from its higher-frequency drivers. (*Super-tweeters*, in contrast, operate above the range of the typical tweeter.)

### ***Sound and Value***

At Hirsch-Houck Laboratories in recent years we have reviewed several three-piece speaker systems, and each of them has given excellent results. One thing that is common to all such systems is their high value per dollar ratio, one that would be difficult to match with two full-range stereo speakers.

Part of this stems from the fact that a bass module can be designed to operate quite well in its limited low-frequency range. Getting a pair of conventional full-range speakers to perform well in that same range would require two rather large and expensive cabinets and woofer drivers. A major component of any speaker's cost is its cabinet, and two small enclosures for the satellites and one of moderate size for the bass module are probably less expensive to manufacture than two large enclosures.

### ***Hide the Speakers***

The three-piece system I use is part of the stereo installation in the family room of my home. Unlike my laboratory listening room, the situation in the family room required that the equipment be inconspicuous. After much experimenting I was able to get the sound I

wanted with an unobtrusive bass module and two small satellites.

Few of today's three-piece systems, which have satellites approaching bookshelf-speaker size, are designed to be as inconspicuous as possible. But if unobtrusiveness is important to you, you can assemble your own three-piece system by purchasing a separate bass module and using as satellites a pair of the many excellent very small speakers on the market.

### ***Fit the Room***

In addition to ease of concealment, the three-piece system can offer solutions to other kinds of installation problems. In some rooms the placement of furniture or certain architectural features makes it impossible to put full-range speakers in the optimum location to deliver balanced stereo at your favorite listening position. Small satellites, however, can often be mounted on walls or on top of pieces of furniture where you cannot put speakers of ordinary size and weight, and the bass module can be placed almost anywhere in the room.

The imaging qualities of satellite speakers used in three-piece systems are frequently superior to those found in larger systems, even when the latter are of higher overall quality. One theory of sound reproduc-



tion holds that a sound source should be an infinitely small "point source" for optimum stereo-imaging qualities.

The effective size of a speaker's sound source is a function of its actual size. The smaller the dimensions of the driver and adjacent enclosure surfaces, the better the speaker's polar dispersion and the more nearly the sound will appear to come from a single point in space. With two speakers and a properly made stereo recording, this point can be located anywhere between the two speakers.

Although there is definitely not universal agreement on the relative subjective desirability of point-source radiators versus those using reflected or dispersed sound sources for some or all of their output, if nearly pinpoint stereo imaging appeals to you, a good three-piece system may be your most logical and economical choice.

## ***The Bass Module***

Most bass modules radiate the low-bass frequencies from both stereo channels from a single enclosure, typically placing the two drivers in acoustically isolated compartments. In some bass modules, the two channels are summed below the crossover frequency and radiated by a single driver. The justification for

this has been that the lowest frequencies carry little stereo information, and therefore combining them into a mono signal sacrifices no audible separation but does simplify the design of the bass module and lowers its cost.

In addition, "monoizing" the lowest frequencies reduces analog-disc rumble and the background rumble (or "studio rumble") heard on some digital discs. Both are primarily out-of-phase signals and are thus canceled out by the summing process.

## ***Visible Bass***

If the bass modules can sometimes be heard as a separate sound source, that effect can be minimized by placing it midway between the satellites. But since one advantage claimed for separate bass speakers is that they can be placed anywhere, you may not wish to sacrifice flexibility of location.

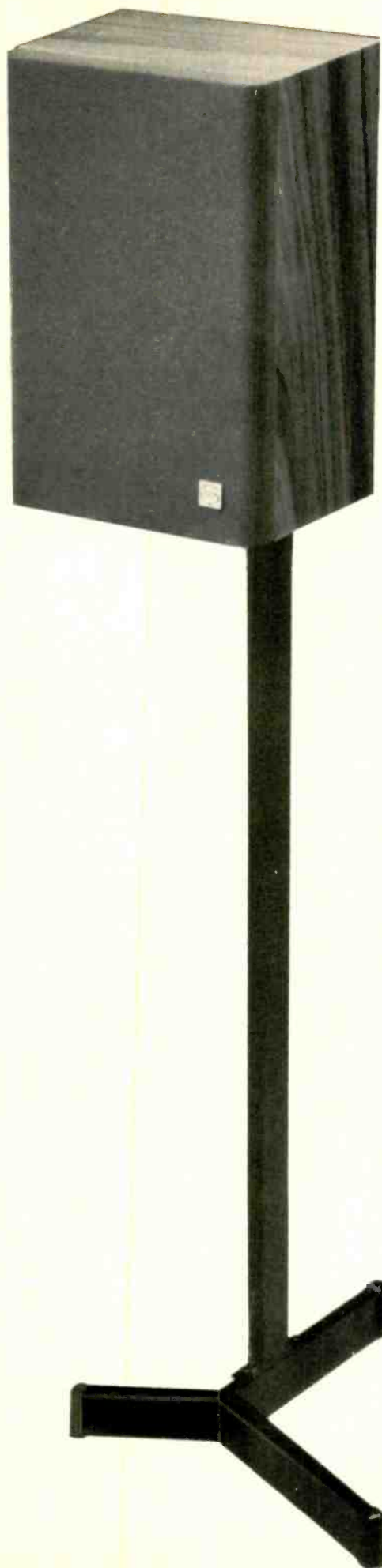
The bass module in my three-piece system is placed next to the right-channel satellite, yet I am only rarely aware of the bass speaker as a separate sound source (usually when the program content is entirely in the left channel). I attribute its occasional separate audibility to my system's use of the crossover frequency of 160 Hz, which is really a bit high for optimum results. (Crossover frequencies in that range are, however, often selected for economic and manufacturing reasons.) My experience suggests that a three-piece system operating with a crossover frequency below 100 Hz makes the bass module almost impossible to detect regardless of its placement in the room.

## ***What to Listen For***

A good preliminary test of a three-way system is to disconnect the satellites temporarily and listen to the output of the bass module alone. When playing music you should hear only a deep, characterless sound, with no identifiable musical quality, and in the case of speech, the bass module's output should be totally unintelligible or absent altogether. If you can hear the woofer as such, it is probably either too loud or operating with too high a crossover frequency.

Some three-piece systems provide level-balance controls, or even crossover-frequency selection. Both features are highly desirable. A sep-

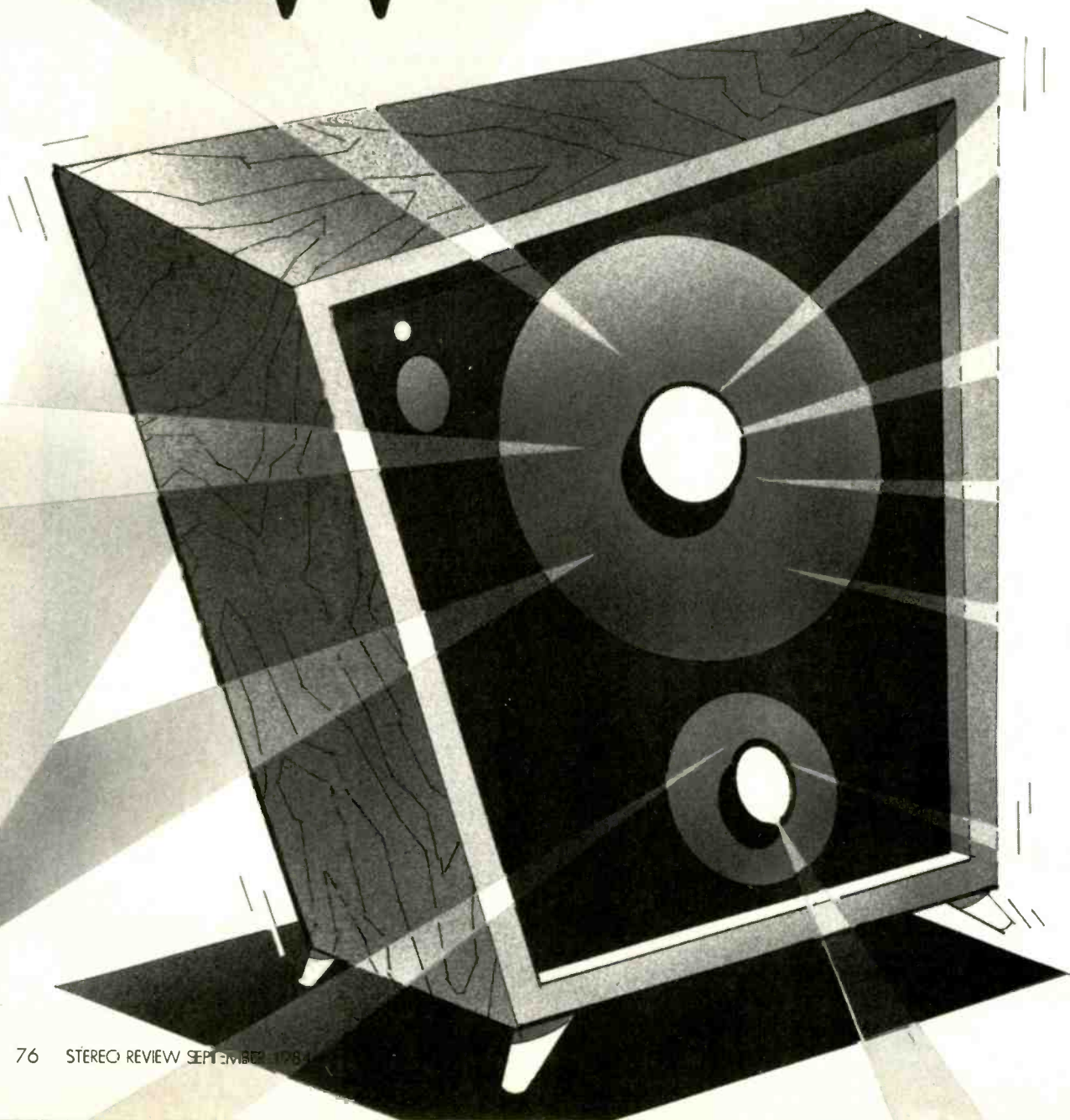
*(Continued on page 113)*



DESIGN ACOUSTICS

# OFF THE WALL!

*by Timothy Holl*



**S**o you finally got those new speakers you've been looking at and listening to in the store for the last couple of months. You rush to hook them up, call in a couple of friends, put your favorite tape in the cassette deck, and sit back to enjoy the music. But your friends are not impressed, and, to tell the truth, neither are you. "That's funny. They sounded great in the store."

What's going on? If your new speakers are inherently good performers, you've probably placed them poorly in your listening room. In operation, a speaker system isn't just two walnut-veneered boxes, it is those boxes plus the listening room, the listeners, their ears, and where they are all located.

Loudspeaker sound can change substantially with slight changes in positioning. And with a little knowledge of the sonic changes each move will cause, you can follow logical steps in the process of placing your speakers instead of just making a series of stabs in the dark. You can optimize overall frequency balance and stereo imaging, knowing what compromises may be necessary in one area to improve on the other.

### ***First Attempts***

Your first guide to speaker placement should be the manufacturer. After all, the people who designed the speakers should know best where they ought to be positioned. Carefully read the manufacturer's instructions and follow the place-

ment guidelines given. If you are not satisfied with the results, or if the manufacturer supplied no instructions (an annoyingly frequent occurrence), experimentation is in order. One of the most frequent areas of dissatisfaction is bass performance.

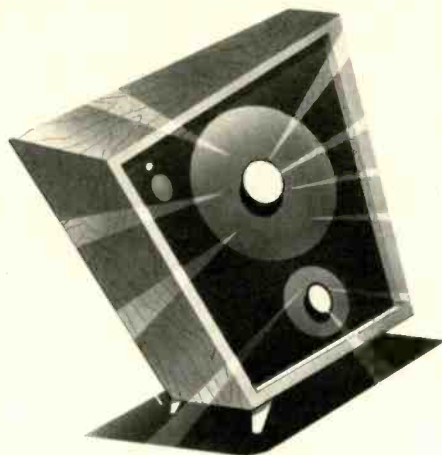
### ***Bass Sentiments***

A boomy, "one-note" bass can be caused by *standing waves* (resonances) in your room. All rooms resonate, much as organ pipes do, when a room dimension is half the length of the sound wave being emitted by the speakers. A room with an 11-foot dimension, for example, will have resonances at about 50 Hz and multiples thereof (100, 150, 200 Hz, etc.).

A convenient method of finding a room-resonance frequency in hertz is to divide 565 by the dimension in feet. Every room dimension (height, width, length) will have its own set of resonances. The effects of these can frequently be minimized by asymmetric placement of the speakers relative to the side walls. You might try one speaker three feet from the left wall and the other speaker five feet from the right wall, for example.

If a troublesome resonance still remains, changing the speaker placement relative to the rear wall may help. When the difference in path length to the ear between the direct sound from a speaker and a sound reflected from floor, wall, or ceiling is equal to a half wavelength (use the formula given above), then a cancellation at the listening posi-

***The walls of your listening room are really a part of your speaker system. Getting speakers to interact properly with the walls to produce the best sound may require unconventional placement in the room. Don't be at all afraid to experiment.***



***You might try toeing the speakers inward so that their front axes cross in front of your listening position, not at it. This will sometimes firm up the stereo image.***

tion occurs at that frequency. Use this to your advantage by moving the speakers forward a few inches at a time until the cancellation frequency for the rear-wall reflection coincides with the room resonance. The resonance effects can thereby be minimized or eliminated.

It is a common misconception that if a speaker is moved from a mid-wall or stand-mounted position to a floor placement, the bass will increase. In fact, because the distance of the move is small compared with low-frequency wavelengths, the speaker's low-frequency operating environment is usually not changed significantly.

What *does* happen is that the floor reflections *decrease* the output in the *midrange* as the speaker moves from stand or bookshelf to floor. That might give the impression of more bass, but it also changes the balance of mid to high frequencies. Thus, in addition to having "a little more bass" as expected, a speaker designed for wall placement may well sound totally different when it is placed on the floor.

## ***Standing Around***

Floor placement with the speakers' backs against a wall will, with most speakers, cause a cancellation in the lower midrange (200–300 Hz). Some speaker designs take account of this or even eliminate the effect entirely, but a speaker designed for installation out in the "free space" of a room may well lose "warmth" or "body" (while increasing "bass") if placed against a wall. Moreover, if this same speaker is raised up from the floor while keeping it against the wall, at some height the floor reflection may well make the lower-midrange cancellation worse. The moral: when considering wall or stand placement, don't just try one height and give up

if it doesn't sound right. Try several heights and listen to the results.

If you intend to use speaker stands, don't simply rush out and buy the first nice-looking pair you come across. In addition to looking for stands which come close to your experimentally determined optimum height, look for stands which are rigid and inflexible, which rest firmly on *your* listening-room floor (without swaying or rocking), and which hold the speaker firmly.

Bookshelf placement also requires that speakers be held firmly. Many speakers benefit if they are mounted as if buried in a wall with their front panels flush to it. You can approximate this without punching big holes in the plaster by placing books or records (*not* tapes) on either side of the speaker so that the bindings are flush with the speakers' front panels. The speaker should never be placed so that its face is recessed in books, records, or furniture, as the resultant cavity will almost certainly produce undesirable resonances.

Another factor affecting overall tonal balance concerns multi-way loudspeaker systems, which includes just about every high-fidelity speaker. Multi-way systems have crossover-frequency regions in which woofer and midrange, or midrange and tweeter, are operating together. The result of this multi-driver interference is a varying sound dispersion pattern in the crossover-frequency regions; the speaker will deliver a different frequency response as the listening axis changes. Changing the height of the speaker relative to the listener and tilting or angling it permits you to find the best axis.

## ***Images***

Aside from frequency balance, the other major aspect of speaker

placement is stereo imagery. While your speakers may have to be placed asymmetrically relative to the room boundaries, they should be placed symmetrically relative to the prime listening position. Moreover, the crossover-region dispersion effects mentioned above can cause a very ill-defined stereo image if the two speakers deliver different frequency responses to the listener.

Many speakers have their drivers arranged in a straight line or "vertical array." Such systems should be placed so that the array remains vertical (they should not lie on their sides). This ensures that crossover-dispersion problems will not affect imaging; the tonal balance of each speaker and hence the stability of the stereo image will not change with listening position. For similar reasons, if your speakers are sold as a mirror-image matched pair, they should be used as such.

Moving the speakers to different positions relative to the rear and side walls may also affect the image. The apparent "depth" of the sound stage is often increased by moving the speakers away from the back wall, though this may create other problems with tonal balance. You might also try toeing the speakers inward so that their front axes cross *in front* of the listening position, not at it. This can sometimes "firm up" the image, though you might lose some treble response.

These are just a few of the trade-offs between image and response you must make when finding the best spot for your speakers. But the only way to get the best performance out of your speakers in your listening room is to experiment. Besides, moving speakers around is good exercise. □

*Timothy Holl spearheaded the Acoustic Research design team that worked on the justly renowned AR9 speaker.*



# ENHANCING DIGITAL SOUND

*If digital recording is perfect, can the sound of the Compact Disc be improved? Carver Corporation and Sound Concepts, among others, say it can be. We say it never hurts to try.*

*by Myron Berger*

**I**n the beginning, there was noise . . . and distortion, compression, and crosstalk. These sonic imperfections begat noise-reduction systems, dynamic-range enhancers, image enhancers, impulse-noise suppressors, and other various and sundry signal-processing gizmos. Then, to the accompaniment of digital cannon blasts, the Compact Disc was born. Silent and clean, the CD has no need for the sonic bandages of the past imperfect. Or does it? If digital recording and playback are as close to perfection as proponents claim, is further sound enhancement or processing necessary or even possible?

The answer, simply put, is that CD technology holds more promise than it currently delivers. Those gizmos are still useful. While both CD hardware and software are capable of ear-stretching performance, almost none of the music discs now available come close to the theoretic

cal limits of the system. Indeed, most of the music that is on Compact Discs (some 70 per cent of it, according to a spokesman for CBS Records) has been recorded and mixed as an analog-tape signal and probably purposely compressed in the bargain. Additionally, several major classical record labels are rumored to compress their CD's for what might be called "commercial considerations." And then there are those CD's made from antique (pre-Dolby, even pre-stereo) analog master tapes.

The vast majority of today's recording engineers and producers have far more experience working in the "analog domain" than in the digital. As one recording industry official noted: "Most engineers don't record any differently for CD—they think it's just another format." Almon Clegg, general manager of the audio division of the Matsushita (Panasonic/Technics) Technology Center and a leading

*The analog-disc noise that appeared mostly out of the ambience channels during the days of quad is gone with the CD. The result is a much more believable sense of acoustic space.*

audio engineer himself, puts forth a concrete example. "In the analog recording world, there is an unwritten law to increase the high [frequency] end [on the master tape], from about 5 to 12 kHz, to make it 'come out right' on vinyl. Some engineers are unintentionally continuing this with CD's." The boost on the master tape—whether it is analog or digital—is generally "passed right along on the CD."

**A**n equalizer (graphic or parametric) can go a long way toward taming what some call the "harsh" sound of digital recordings. A slight cut (1 to 3 dB) in the right places (5 to 8 kHz) can do wonders. The fact that this cut corresponds to the response peak found in many "professional-quality" microphones or to the peak introduced by analog-oriented engineers says less about the allegedly bad qualities of digital sound than about the medium's ability to capture a bad signal faithfully.

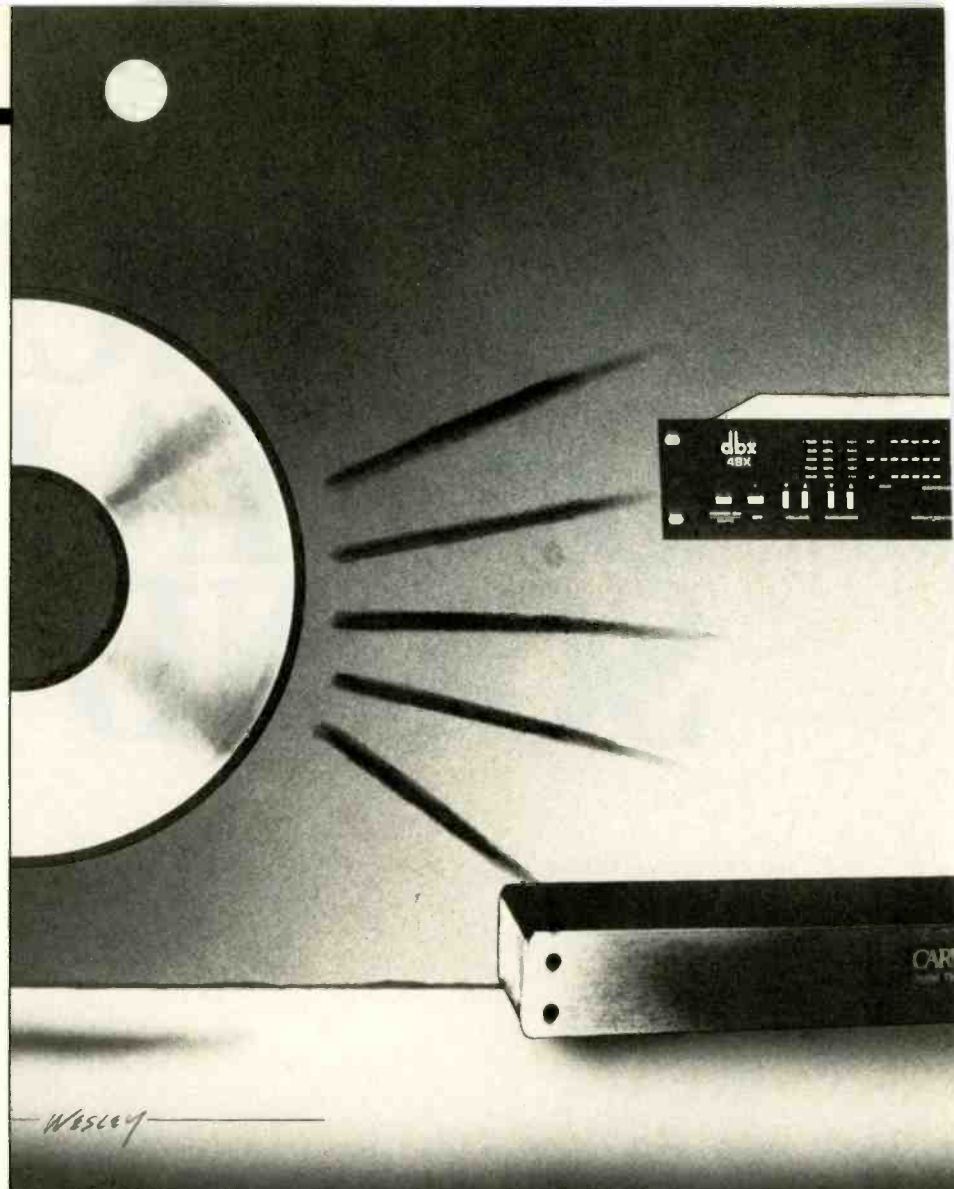
Bob Carver of the Carver Corporation was among those who noticed a hotter high end on some CD's. In further testing, he also found that the difference, or L-R channel-difference signal (which provides the psychoacoustic clues to ambience and spatial detail), was 1.5 to 2 dB lower than in the equivalent analog pressing. In power out-

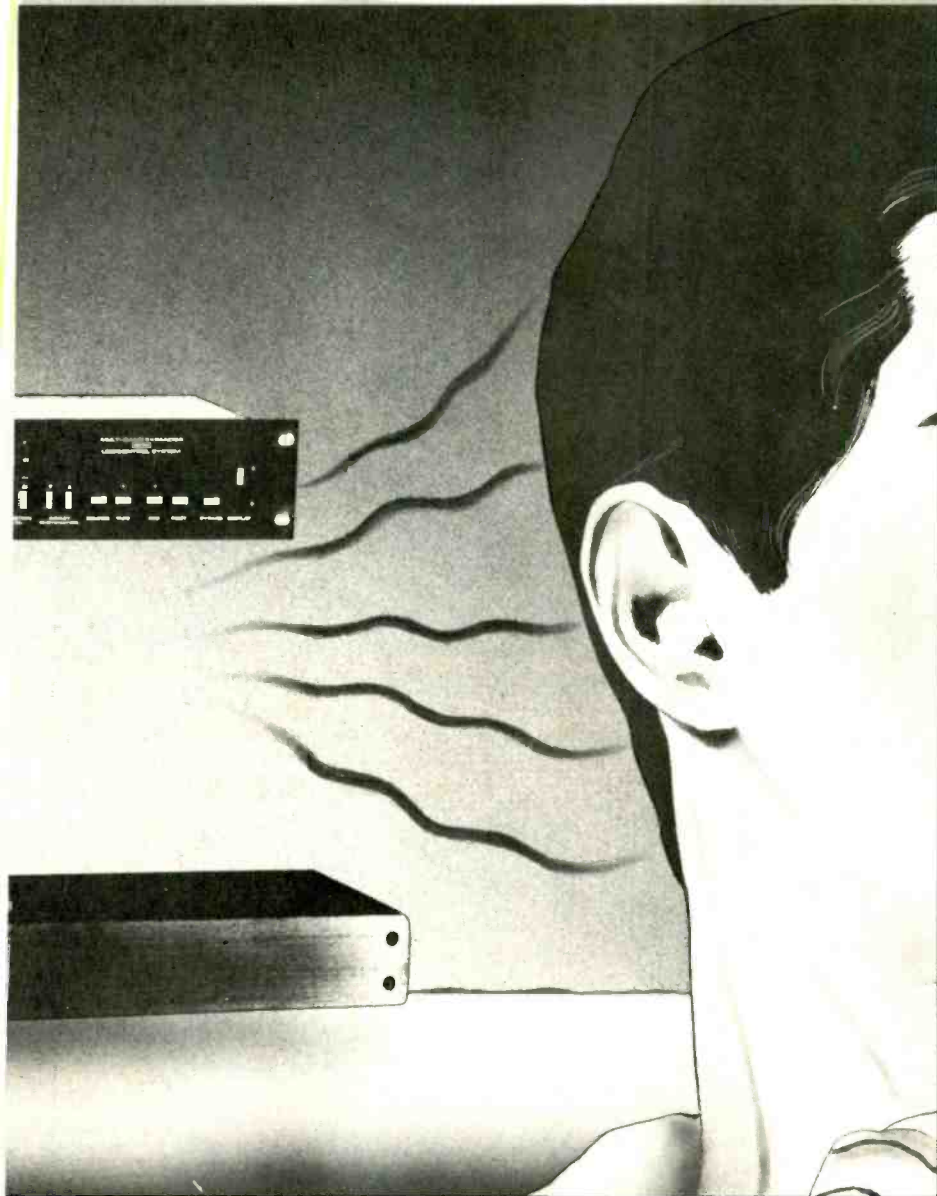
put into the listening room, Carver claimed, "the CD has 49 per cent less L-R than the analog recording." And so Carver developed a CD signal processor, the Digital Time Lens (\$250). Connected between the disc player and preamp, the box slightly cuts mid-high frequency response and strengthens the L-R signal. Carver is quick to point out, however, that the problems he claims to have found in CD's are neither universal nor endemic to the medium. He describes his processor as a "temporary" product and believes CD performance is destined to improve.

**P**erhaps the most useful (but the most controversial) signal processors for CD's are limiters and expanders. Why, you may wonder, would anyone want to degrade the CD's dynamic-range performance by compressing it? Joel Cohen, pres-

ident of Sound Concepts, suggests that "The reality is that the average person couldn't or wouldn't want to play back full dynamic range in a living room. It would seem unreal to most middle Americans. Most of them have no standard of reference because they've never heard live music."

Jerome Ruzicka, vice president at dbx (makers of dynamic-range enhancement devices, among other things), believes that CD compression has three main applications: in a car (because of the high ambient noise level), to make wide-dynamic-range recordings usable as background music, and in home systems that might be damaged by power peaks. Technics' Clegg confirmed that some customers had complained to the company that CD recordings damaged their speakers. Telarc's magnificent CD recording of Tchaikovsky's *1812 Overture* bears a yellow warning label on the cover reading: "CAUTION! DIGITAL CANNONS." Inside the jack-





CARL WESLEY

et, the company explains: "Certain components—even the finest—may have problems with the most demanding passages. . . . Lower levels are recommended for initial playback until a safe level can be determined for your equipment." A compressor could solve all these problems, albeit at some sonic and dramatic expense.

**W**hat about an expander? Ruzicka explains that it all depends on the original master tape, how well it was made, and how old it is. The older recordings slowly trickling out onto CD's still need all the help they can get. "A CD is presumably a transparent replica of the master. In the early Sixties, a good recording might have a dynamic range of 50 to 55 dB. An expander can increase this up to 50 per cent, so 50 dB becomes 75 dB and 60 dB becomes 90 dB."

On the other side of the coin, Almon Clegg takes the position that the use of compression generally represents not only a response to commercial pressures, but also a creative choice by the record producer. To tamper with it is to distort the original artistic vision. But for those willing or compelled to tamper, many of the digital discs now available leave considerable room for expansion.

Also related to the dynamic range question is the use of a single-ended noise-reduction system (like DNR) on CD sound. Again, it all depends on the quality of the recording. Some need it (or at least could benefit from a little noise reduction), others don't. It never hurts to try.

One area not yet directly addressed by the new digital technology is the reproduction of ambience, that sense of sonic space which should surround both performers and listeners. While some attempt at reproducing ambience was made with quadrasonic recordings in

the early 1970's, the more sustained effort has been provided by time-delay devices, which do not reproduce ambience, but, rather, synthesize or unmask it. Time-delay devices should work at least as well on CD's as LP's, and some recording engineers are experimenting with four-channel encoding/decoding systems (remember them?) on digital recordings. Because of the increased channel separation and lower noise in digital recordings, the four channels can be more discrete and hence more accurately generate the ambient field. Nimbus has a few CD's encoded with the UHJ quad matrix system, but no CD's have yet been recorded in discrete four-channel sound, though the technology would permit it.

**E**ven the "space" of two-channel stereo can sound better on CD's, suggests Sound Concepts' Joel Cohen. His company makes the IR-2100 (\$249) image enhancer, which is designed to increase the lateral spread of stereo images. "CD's are capable of a much clearer and cleaner stereo image," he said. "It makes a device like ours much more useful." He attributes this improvement to the CD's "perfect phase alignment and a cleaner difference [L-R] signal."

If you have an old matrix quad decoder from the Seventies or use an ambience-extracting speaker hookup (the "Hafler circuit"), try some of the more spectacular-sounding CD's. The analog-disc noise that appeared mostly out of the ambience channels during the days of quad is gone with the CD. The result is a much more believable sense of acoustic space.

All recordings, whether from digital or analog masters, on digital or analog discs, are limited by three factors: the technology, the use of the technology, and the musical performance. The latter two, being human factors, are subjective. Regardless of how powerful or sophisticated the technology becomes, it is unlikely to achieve what has been historically unattainable: a perfect sonic illusion. But with CD's that are properly recorded and processed you can come pretty close. □

*Myron Berger's articles on audio and video have appeared in many newspapers, professional journals, and magazines.*

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**R BEST OF THE MONTH**

# JOY IN MUSIC

*Cho-Liang Lin plays two popular violin concertos with freshness, an unfailing sense of style, beauty of tone, and prodigious technical skill*

*by Richard Freed*

**A**NOTHER recording of the Mendelssohn Violin Concerto may not have been quite the most urgent need in the current catalog, nor even another one of the Saint-Saëns Third Concerto, whose ample representation has been augmented by two new versions in the last few months. But the new CBS coupling of these two concertos sweeps such reservations away with the extraordinary beauty and freshness of Cho-Liang Lin's violin playing.

Lin's playing has *everything*—the most gorgeous, pure tone, an unfailing sense of style, grace, flair, and obvious joy in making music. His tone production alone, rich and even throughout the entire range, would command admiration and envy, but nowhere does he allow the momentum to sag in order to hold

CBS MASTERWORKS



up a passage for display: the flowing spontaneity of these performances is remarkable.

Here is a musician, aged twenty-four, equipped not only with prodigious skill but with exceptional maturity, who makes us feel he loves and believes in the music he is playing, that it becomes for him the most beautiful music in the world while he is absorbed in it. Who could have believed the Mendelssohn could sound so new and yet so lovably familiar, or the Saint-Saëns so substantial as well as so voluptuous? The latter's hymnlike slow movement can easily descend into bathos, but here it exudes dignity as well as warmth of heart.

In Michael Tilson Thomas, Lin has the most sympathetic of collaborators. The solo and orchestral elements in both performances mesh with the thoroughness and the productive give-and-take of chamber music, and the Philharmonia Orchestra sounds as if every player responded to both the soloist and the conductor on an inspired level. CBS has preserved these marvelous performances in sound that does them full justice.

**MENDELSSOHN:** *Violin Concerto in E Minor, Op. 64.* **SAINT-SAËNS:** *Violin Concerto No. 3, in B Minor, Op. 61.* Cho-Liang Lin (violin); Philharmonia Orchestra, Michael Tilson Thomas cond. CBS ● IM 39007, © IMT-39007, no list price.



**Riccardo Chailly: a Nevsky for audiophiles**



**Stevie Ray: true grit**

**T**HERE'S something reassuring about the success of Stevie Ray Vaughan. At a time when popular taste runs to music that's synthetic, androgynous, stylized, and theatrical, Vaughan's electric blues is gritty, unpretentious, and hot-blooded.

"Couldn't Stand the Weather" is the second album by Vaughan and Double Trouble (bassist Tommy Shannon and drummer Chris Layton). Vaughan has tightened his playing, added heft to his singing, and improved on a debut album, "Texas Flood," that didn't seem to leave room for improvement. The biggest difference is evident from the opening cut, *Scuttle Buttin'*, an instrumental built around an astonishingly packed yet fluid riff.

Vaughan uses his virtuosity as a starting point, but he makes better use of it all through the songs, not just in the solos. The melody writing is a little more ambitious, and the rhythms more adventurous. Though solidly anchored in the blues, this music transcends blues. As a result, Vaughan seems to get that much closer to the heart of what the blues are supposed to be—raw, alive, flesh and bone.

In addition to the new originals, Vaughan covers a couple of blues standards—Guitar Slim's *The Things I Used to Do* and Jimmy Reed's *Tin Pan Alley*. Both showcase his developing vocal ability more than anything else. But the show stopper is his cover of Jimi Hendrix's classic *Voodoo Chile*, which reveals a deep, almost organic link between Hendrix and the blues that I don't think I ever appreciated before.

"Weather" also benefits from excellent production. The sound is heavier and deeper and gives more weight to Shannon and Layton. It also gives Vaughan's own playing a round, clean, classic Fender blues tone, with plenty of foot pedal, and a volcanic quality that seems ready to erupt at a moment's notice into a rain of sparks and molten rhythm riffs.

In the astringent pop music environment of MTV, Stevie Ray Vaughan's Texas electric blues is a welcome breath of hot, sweaty bar-room air.

*Mark Peel*

**STEVIE RAY VAUGHAN AND DOUBLE TROUBLE:** *Couldn't Stand the Weather.* Stevie Ray Vaughan (vocals, guitar); Tommy Shannon (bass); Chris Layton (drums). *Scuttle Buttin'*; *Couldn't Stand the Weather*; *The Things I Used to Do*; *Voodoo Chile (Slight Return)*; *Cold Shot*; *Tin Pan Alley*; *Honey Bee*; *Stang's Swang.* EPIC FE 39304, © FET 39304, no list price.

**P**ROKOFIEV'S cantata *Alexander Nevsky*, derived from the 1938 film epic of medieval Russia directed by Sergei Eisenstein, has hardly ever lacked for recordings to match its scale and splendor, beginning with one conducted by Eugene Ormandy back in 1945.



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CIRCLE NO. 3 ON READER SERVICE CARD



COLUMBIA RECORDS

**Springsteen: the Boss is back**

Riccardo Chailly and the Cleveland Orchestra, with its fine chorus trained by Robert Page, and with Russia's leading mezzo, Irina Arkhipova, doing the memorably poignant *Field of the Dead* solo, now give all comers a real run for the money. The new performance on London benefits, too, from the superb digital mastering done in Cleveland's acoustically superior Masonic Auditorium.

The details afforded by the digitally mastered sonics are at their most impressive in the icy, wind-swept vistas of the opening pages and at the beginning of the *Battle on the Ice*, with its *ponticello* effects and offstage horn and trumpet calls. Likewise, the recording encompasses with seemingly effortless ease the huge climaxes of the *Crusaders at Pskov* and the densely-textured polyphonic complexities that mark the culmination of the *Battle on the Ice*. The final pages, for all their bombast, leave one overwhelmed by the sheer volume of dynamics and body.

This is a thoroughly satisfying realization of a great score and stunning state-of-the-art recording of demonstration quality. *David Hall*

**PROKOFIEV: Alexander Nevsky, Op. 78.** Irina Arkhipova (mezzo-soprano); Cleveland Orchestra, Riccardo Chailly cond. LONDON ● 410 164-1 \$11.98, © 410 164-4 \$11.98; © 410 164-2, no list price.

**B**RUCE SPRINGSTEEN'S long-awaited new album, "Born in the U.S.A.," is a remarkable performance, a sort of contemporary musical equivalent of Dos Passos's *U.S.A.* without a hint of pretension. At once somber and hilarious, hard-rocking and serene, it makes the Big Statement that Springsteen has been attempting with every album since "Born to Run."

Gone are the operatic pomposity and Spectorian bombast that were threatening to turn one of the few American rock stars worth caring about into an unintentional self-parody. Instead, what we get is a stripped-down, hard-edged instrumental sound and a magnificent set of songs in which Springsteen casts himself, utterly convincingly, as a Working Class American Everyman, a guitar-playing incarnation of all the people Studs Turkel has ever written about.

Among other things, "Born in the U.S.A." may be the most believably adult rock-and-roll album ever made. The character Springsteen assumes in these songs is a certifiable grownup, a man who remembers what it means to be young with nary a trace of bitterness (check out *Glory Days*, which makes the theme both explicit and funny) but whose attitude towards the future is a kind of rueful resignation (as in the concluding *My Hometown*). And yet, perhaps paradoxically, "Born in the U.S.A." seems genuinely teenage, and succeeds on the level of party record more than anything Springsteen has done previously.

There is a classic single in *Dancing in the Dark*, which nudges the E Street Band into synth-pop, and *I'm Going Down* is the hardest and most authentic rocker Bruce or anybody has done in years. Not to mince words: The Boss, quite clearly, is back. *Steve Simels*

**BRUCE SPRINGSTEEN: Born in the U.S.A.** Bruce Springsteen (guitar, vocals); the E Street Band. *Born in the U.S.A.; Cover Me; Darlington County; Working on the Highway; Downbound Train; I'm on Fire; No Surrender; Bobby Jean; I'm Going Down; Glory Days; Dancing in the Dark; My Hometown.* COLUMBIA QC 38653, © QCT 38653, © CK 38653, no list price.

## NEW ON CD Compact Discs of previously reviewed recordings

### POPULAR

- **Laurie Anderson: Big Science.** WARNER BROS. 2-3674. "Amusing and hypnotically pretty." (September 1982)
- **Footloose.** Original-soundtrack recording. COLUMBIA CK 39242. "Torrid teen dance epic." (July 1984)
- **Billie Holiday: Songs for Distinguished Lovers.** VERVE 815 055-2. "In a class by herself." (April 1984)
- **Cyndi Lauper: She's So Unusual.** PORTRAIT/CBS RK 38930. "Devastating." (March 1984)
- **Nine.** Original Broadway cast. COLUMBIA CK 38325. *The Tony Award-winning musical.* (February 1983)
- **Pointer Sisters: Break Out.** PLANET/RCA PCD1-5083. "At their sassiest, brassiest best." (April 1984)
- **Bruce Springsteen: The Wild, the Innocent, and the E Street Shuffle.** COLUMBIA CK 32432. "Sensational." (April 1974)
- **Stevie Ray Vaughan: Texas Flood.** EPIC EK 38734. "A gritty, jumping, altogether thrilling album." (November 1983)

### CLASSICAL

- **Beethoven: Piano Sonatas No. 8 ("Pathétique"), 14 ("Moonlight"), and 23 ("Appassionata").** Ashkenazy. LONDON 410 260-2. "First-rate performances." (February 1983)
- **Bernstein: Works for Solo Piano (Complete).** Tocco. PRO ARTE CDD 109. "Brilliant playing." (January 1984)
- **Brahms: Four Ballades, Op. 10: Two Rhapsodies, Op. 79.** Gould. CBS MK 37800. "Characteristically probing." (July 1983)
- **Haydn: The Creation.** Karajan. DG 410 718-2. "Played with a sense of grandeur." (January 1984)
- **Mahler: Symphony No. 4.** Popp, Tennstedt. ANGEL CDC 47024. "Keenly felt." (August 1983)
- **Prokofiev: Peter and the Wolf. Britten: Young Person's Guide to the Orchestra.** Ormandy (David Bowie narr.) RCA RCD1-2743. "Charming." (July 1978)
- **Rameau: Dardanus, Suite.** Gardiner. ERATO/RCA ECD 88.103. "Sparkling." (January 1984)
- **Vivaldi: The Four Seasons.** Schwarz. DELOS D/CD 3007. "Virtuosity and vigor." (February 1981)



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Everyone's learned a lot. The Phone Company is offering features and the Independents have gotten the license of a regular Phone Company handset.

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If you do decide to lift the receiver, you'll find it cradles right on your shoulder just like a Phone Company phone.

So, using this phone is like finding an old friend who's been educated since the last time you saw one another.

## PERFECT MARRIAGE

The real claim to fame of this phone is its marriage of Phone Company fit and feel with super convenience features.

Imagine walking around the room, taking notes or even washing the dishes while you talk on the phone.

And, with a speakerphone, anyone else in the room can join in too. You'll be heard loud and clear whether you are nearby or across the room, because this phone has a built-in condenser mike.

This speakerphone uses a new lightning fast auto-simplex design. It's one of the reasons that it sounds so good. You see, instead of talking and listening at the same time and sometimes getting feedback and hollow sound, this phone only does one at a time.

But, don't be misled. You won't even know it's happening. The computer brain in this speakerphone switches back and forth automatically with such lightning



speed, it took us about 10 minutes of conversation to be sure.

Of course, there are no push-to-talk buttons. Everything is automatic. And, you're in full control. You'll have a full range volume control, and you can switch to the comfortable handset at any time.

The handset has its own condenser microphone and a headphone quality speaker in the earpiece to let you hear and be heard with astonishing clarity.

## THERE'S MORE

You'll love dialing with this phone. There are no cheap flat buttons. You'll have sculptured keys that fit your finger and feel solid. But, the best part of this phone is not dialing at all.

You'll have a super fast 10 number automatic dialer that works with both the handset and the speakerphone.

Dialing with the speakerphone is really nice because you don't have to lift the receiver unless you reach the person you want to talk to.



Each number you store may have up to 16 digits and you can switch from Pulse to Tone at any time. So, if you live in a Pulse area and want to use Sprint or MCI, just dial your local access code in Pulse, then switch to Tone.

Don't worry about this memory dialer forgetting. When you put in 3 standard AA batteries, all your memory is protected. And, because this phone is totally telephone line powered, it doesn't require an AC plug. So, local power failures won't affect your ability to use your phone.

## THE FINAL FACTS

This phone is loaded with all the latest phone features. Its electronic ringer has high, low and 'off for privacy' settings.

Both its handset and phone line cords are disconnecting modular cords. So, just plug it in and start talking.

The phone is slanted toward you for ease of use. A stand flips out to give you a comfortable dialing angle for desk or counter use.

The phone also mounts easily on the wall with two screws. There's a mute button for privacy and LED indicators show various operations.

It's made by Unitech, the large personal stereo and telephone manufacturer. You can be sure that the circuitry and sound quality are state of the art. It's backed by their limited warranty.

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# HUMAN'S LIB

by Mark Peel

*Howard Jones gives synth-pop more than just a danceable beat—he gives the music humanity*

**H**OWARD JONES' "Human's Lib" is the album I was sure Thomas Dolby would make—the capstone on synth-pop, a summation of the genre's technical possibilities, and a rebuke to its mannered, art-school artifice. At a time when new music seems to have surrendered to dilettantes with access to drum machines, Jones uses synthesizers because of what they permit him to do, not because they're all he can manage.

Reversing the current trend of artists having to figure out how to perform their music live after they've recorded it, Jones played some two hundred live performances before setting foot in the studio. But this obscures his real contribution, for with "Human's Lib" he does what synth-pop has largely failed to do: he gives electronic music humanity, not just a danceable beat.

"Human's Lib" is at once rhythmic and lyrical, intellectual and romantic, sophisticated and guileless. It is a musical accomplishment, not a technological one, rich in melody and harmonic detail. Its immediacy and accessibility make it seem familiar the first time you hear it, and in fact many of the main threads of new music come together here. It must be said that Jones's vocals are not particularly distinctive—he could be any of a hundred good British pop vocalists. But it's what he sings that's important here, not how.

Jones's lyrics are marked by a continual questioning of the status quo. It's a sort of restless optimism, a refusal to



settle for things as they are and a belief that they can be improved. Encouraging us to "throw off our mental chains," Jones not only reaches deeper into the human heart than any of his synth-pop colleagues, he points the way toward deeper musical expression. In doing so, he may just have rescued new music.

**HOWARD JONES: *Human's Lib*.** Howard Jones (vocals, synthesizers); saxophone accompaniment. *Conditioning; What Is Love; Pearl in the Shell; Hide and Seek; Hunt the Self; New Song; Don't Always Look at the Rain; Equality; Natural; Human's Lib.* ELEKTRA 60346-1 \$8.98, © 60346-4 \$8.98.

SIMON FOWER/ELEKTRA

**Discs and tapes reviewed by**  
**Chris Albertson**  
**Louis Meredith**  
**Alanna Nash**  
**Mark Peel**  
**Peter Reilly**  
**Steve Simels**

**PEABO BRYSON:** *Straight from the Heart*. Peabo Bryson (vocals); vocal and instrumental accompaniment. *Slow Dancin'*; *Real Deal*; *I Get Nervous*; *Love Means Forever*; and four others. ELEKTRA 60362-1 \$8.98, © 60362-4 \$8.98.

Performance: Impressive  
 Recording: Very good

You may have heard him with Roberta Flack first, but if you don't believe that Peabo Bryson has his own act together, just listen to his new album, "Straight from the Heart." It is one of the finest ballad-oriented pop albums of the year, and not only does Bryson sing superbly throughout, he is also responsible for writing, arranging, and producing the best material. C.A.

**RAY CHARLES:** *Do I Ever Cross Your Mind*. Ray Charles (vocals, piano); instrumental accompaniment. *I Had It All*; *If I Were You*; *I Was on Georgia Time*; *Love of My Life*; *Woman Sensuous Woman*; and five others. COLUMBIA FC 38990, © FCT 38990, no list price.

Performance: Superb  
 Recording: Very good

Few singers have tackled and mastered as wide a stylistic repertoire as Ray Charles. On "Do I Ever Cross Your Mind," his latest album, Charles presents a balanced program of country music and the kind of soulful pop for which he is perhaps best known. Not surprisingly, he excels in both categories, which makes this a very fine addition to an already impressive array of Ray Charles albums. C.A.

**JOE COCKER:** *Civilized Man*. Joe Cocker (vocals); other musicians. *Civilized Man*; *There Goes My Baby*; *Come On In*; *Tempted*; *Long Drag off a Cigarette*; *I Love the Night*; and four others. CAPITOL ST-12335 \$8.98, © 4XT-12335 \$8.98.

Performance: Housebroken  
 Recording: Excellent

Joe Cocker's new album, an otherwise inoffensive slice of high-gloss Los An-



**Jermaine Jackson**

ARTISTA RECORDS

geles pool-side music making, seems designed to reinforce his new image—as romantic balladeer more than boozy bluesman—and it's uninvolved stuff. Not surprisingly, only the remakes, oldies courtesy of the Drifters (*There Goes My Baby*) and the lamented Squeeze (*Tempted*), cut through the MOR smog. S.S.

**DEF LEPPARD:** *High and Dry*. Def Leppard (vocals and instrumentals). *Let It Go*; *Another Hit and Run*; *High and Dry*; *Bringing On the Heartbreak*; *Switch*; *Me and My Wine*; and six others. MERCURY 818 836-1 \$8.98, © 818 836-4 \$8.98.

Performance: Good  
 Recording: Very good

Given that, by now, heavy metal as a genre is about as ritualistically stylized as an average Japanese Noh play, I suppose you have to respect the utter rightness of everything about Def Leppard. And, since one man's meat is another man's cliché, I can't be as condescending about their music as I'd like to be.

That said, I can only report that this "new" album is simply the band's debut record repackaged with heretofore unavailable remixes of *Me and My Wine* and *Bringing On the Heartbreak* (the latter having turned into these guys' very own *Stairway to Heaven*, that is, the song that will be most requested at a Def Leppard reunion concert twenty years hence). It's all beautifully produced, to be sure, and for heavy metal almost tuneful, but I continue to find it about as involving as a dial tone. S.S.

**GARY GLITTER:** *The Leader*. Gary Glitter (vocals); instrumental accompaniment. *Rock and Roll (Part One)*; *Hello! Hello! I'm Back Again*; *I'm the*

*Leader of the Gang (I Am!)*; *Rock and Roll (Part Two)*; *Do You Wanna Touch Me?*; and five others. EPIC 5E 39299, © SET 39299, no list price.

Performance: The real thing  
 Recording: Suitably murky

This collection of Gary Glitter's early Seventies hits is, of course, serenely entertaining pop in its peculiar way, but nostalgia has very little to do with that. The stuff just holds up. Most of the songs, with their pared-down instrumentation (guitar, drums, discrete sax) and oooga-booga chanted lyrics, remain sterling examples of early minimalism, and it matters not one whit that Glitter and his co-workers thought at the time that these were Wagnerian overproductions. In fact, the confusion only adds to the music's unfathomable charm. S.S.

**JERMAINE JACKSON.** Jermaine Jackson (vocals); orchestra. *Do What You Do*; *Dynamite*; *Oh Mother*; *Some Things Are Private*; and five others. ARISTA AL8 8203 \$8.98, © AC8 8203 \$8.98.

Performance: Lively  
 Recording: Good

Essentially this album is Jermaine Jackson's extended tribute to Marvin Gaye and in large part it is a success. Jermaine captures a good deal of Gaye's soulful romantic style. The liveliest track is his duet with brother Michael, (*Too Good to Be True*) *Tell Me I'm Not Dreamin'*; Jermaine and the Gloved One give it an all-stops-out performance that is sure to make it a mega-hit. No offense to Jermaine, but I have a feeling that Michael Jackson's presence at the moment could turn even a Pia Zadora album into platinum. P.R.

**BARBARA MANDRELL:** *Clean Cut*. Barbara Mandrell (vocals); vocal and instrumental accompaniment. *Happy Birthday Dear Heartache*; *I Can Depend on You*; *I Wonder What the Rich Folk Are Doin' Tonight*; *Crossword Puzzle*; and six others. MCA MCA-5474 \$7.98, © MCAC-5474 \$7.98.

Performance: Trouper  
 Recording: Very good

On the back of her new album Barbara Mandrell is shown wearing a white robe and holding a glass of milk. I don't want to get into a grade-school analysis of what *that* might mean, but it is true that Mandrell has a squeaky-clean, wholesome image and that she plays all the

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right Nashville games. That's why nine of the ten songs here were published by her producer, Tom Collins, and why for every loose, gutsy *I Can Depend on You*, we're also made to put up with something like *Crossword Puzzle*, a song so lame in concept it brings tears to the eyes.

Other than that, Mandrell is a trouper, as fine a singer as you'll find in Nashville (or just about anywhere these days), and a secret soul-sister. I just wish she wouldn't keep her good taste and her keen musical instincts in the closet so often. *A.N.*

**WILLIE NELSON:** *Angel Eyes*. Willie Nelson (vocals, guitar); Jackie King (electric guitar); instrumental accompaniment. *Angel Eyes* (with Ray Charles); *I Fall in Love Too Easily*; *My Window Faces the South*; *The Gypsy*; and four others. COLUMBIA FC 39363, © FCT 39363, no list price.

Performance: All that jazz  
Recording: Good

If you know that "Angel Eyes" is the long-promised album that pairs Willie Nelson with the renowned jazz guitarist Jackie King (and on the title track with r-&-b great Ray Charles), you may be prepared for a genuine blowout of an album. Instead, it is a quiet little record that on first go-round doesn't seem

much of a head-turner. At times, in fact, it seems to be rather like a jam session—everybody plays and nobody really knows for sure where it's going.

By the last cut on the first side, however, with King's own *Thank You*, things begin to come together. Generally, King shines brightest on his own material (the other song being his familiar *Samba for Charlie*), and he works up more energy for those two numbers than Nelson appears to have done for the entire project. In the end, though, "Angel Eyes" has a certain winning charm—especially late at night when the cat has been put out, the mind drifts gently downstream, and the soul goes searching for solace. *A.N.*

**NITTY GRITTY DIRT BAND:** *Plain Dirt Fashion*. Nitty Gritty Dirt Band (vocals, instrumentals); Reggie Young (guitar); Ricky Skaggs, Mark O'Connor (fiddle); Jerry "Flux" Douglas (dobro); others. *High Horse*; *Two Out of Three Ain't Bad*; *Video Tape*; and seven others. WARNER BROS. 1-25113 \$8.98, © 4-25113 \$8.98.

Performance: Back to the soil  
Recording: Exceptional

There is a gem of a polished, commercial song here, Jim Steinman's *Two Out of Three Ain't Bad*, but there's a wonderful helping of the Nitty Gritty Dirt

Band's earthiness of old, too, starting with Rodney Crowell's *Long Hard Road (The Sharecropper's Dream)*. This is one of those "can't-stop-listening-to-it" albums reflecting an energetic *joie de vivre*—admittedly in "plain dirt fashion." With such writers as Crowell, Marshall Crenshaw, Bruce Springsteen, Steve Goodman, Dave Loggins, Don Schlitz, Hugh Moffatt, and the Dirt Band themselves, you expect—and get—a terrific cross-section of top-notch material ranging from humor to bluegrass to intelligent country-rock and heart-bending romance.

The vocals and instrumental work sparkle throughout, setting a new standard for Jeff Hanna, John McEuen, and the boys. "Plain Dirt Fashion" is excuse enough to throw a party, put the top down on the convertible, and call up an old beau. *A.N.*

**THE PERSUASIONS:** *No Frills*. The Persuasions (vocals). *Victim*; *You Can Have Her*; *What Are You Doing New Year's Eve*; *I Was Wrong*; *Still Ain't Got No Band*; *Sweet Was the Wine*; and five others. ROUNDER 3083 \$8.98, © 3083 \$8.98.

Performance: Slightly worn  
Recording: Good

The Persuasions first took their *a cappella* style of singing off the Brooklyn

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## BUT, THERE'S A PROBLEM

We thought we'd have enough speakers for the rest of the year, but we sold over 3300 in just our Spring Catalogs. So, we went back to BSR and tried to buy more of the speakers. But, they only sold us the first batch at a close-out price because they had put in the wrong tweeters and didn't know what to do with them.

BSR said that luckily they didn't make mistakes very often and the only other 'problem' they had was an inventory of 6000 too many super tweak 8" midrange drivers with an exotic polypropylene cone they used for an expensive BSR tower system.

## LOOK NO FURTHER

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streets twenty years ago. Perpetuating an art brought to perfection by the Mills Brothers, the group harmonized on a handful of fine albums for such labels as Capitol and A&M and appeared with top artists both on records and in concert. There are moments here when nothing seems to have changed, but the Persuasions also show signs of wear on "No Frills." *C.A.*

**SCORPIONS:** *Love at First Sting.* Scorpions (vocals); instrumental accompaniment. *Bad Boys Running Wild; Rock You Like a Hurricane; I'm*

*Leaving You; Coming Home: The Same Thrill; Still Loving You;* and three others. MERCURY 814 981-1 \$8.98, © 814 981-4 \$8.98.

Performance: Grotesque  
Recording: Heavy

It's rare to come across an album with the power to offend one's sense of decency the way "Love at First Sting" does. As used here, "love" is more like what most people mean when they say "the dog is in heat." In fact, the music world would have been better served had the Scorpions been penned up

somewhere until their condition abated. They weren't, however, and the result is nine brutal, mean-spirited, horny songs that manage to be stupid when they're not lewd. *M.P.*

**NEIL SEDAKA:** *Come See About Me.* Neil Sedaka (vocals); orchestra. *Your Precious Love; New Orleans; Cathy's Clown; Earth Angel; Rhythm of the Rain; Tears on My Pillow.* and four others. MCA MCA-5488 \$7.98, © MCAC-5488 \$7.98.

Performance: Cheerfully sedate  
Recording: Good

In recent years Neil Sedaka has become the Uncle Wiggly of pop. His albums are all still in the superannuated-teenager groove of the Fifties—cheerful and musically sedate. Of late he's been featuring his daughter Dara, and she turns up again on this release to join in a duet, *Your Precious Love*, with dad. Mary Wilson also turns up to sing with Sedaka in *Come See About Me*, as does Gary U.S. Bonds in *New Orleans*. Who knows, perhaps if Sedaka plays his cards right he might never have to sing a solo again. *P.R.*

**BRUCE SPRINGSTEEN:** *Born in the U.S.A.* (see Best of the Month, page 86).

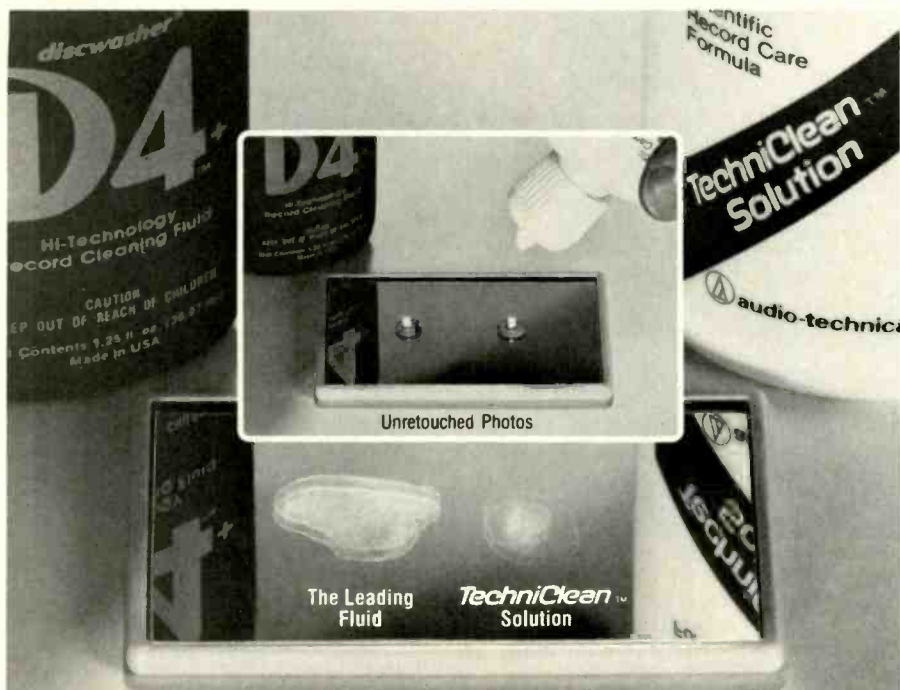
**ROB STONER:** *If You Want It Enough.* Rob Stoner (vocals and instrumentals). *Marie's the Name; If You Want It Enough; Trouble with a Capital "T"; I'll Cry Instead; Knockin'; If You're Gonna Break My Heart; Do Yourself a Favor; Usherette;* and three others. SUN 1031 \$8.98, © C 1031 \$8.98 (from Sun Records, 3106 Belmont Blvd., Nashville, Tenn. 37212).

Performance: Assured  
Recording: *Sui generis*

Rob Stoner, whom you may remember from his stints backing up Bob Dylan and Robert Gordon, may not be an authentic first-generation rockabilly cat, but he's been aping Elvis, Carl Perkins, and the rest of them around Manhattan for well over a decade now, and he comes to his obsession a lot more honestly and unselfconsciously than, say, the Stray Cats. His new album, the first on the revived Sun label, is a relaxed, playful affair, with fewer production frills than most revivalist records of this sort and a good deal more of a sense of humor.

Rockin' Rob plays and sings every note here through "the miracle of overdubbing" (as it's described in the liner notes), and what he lacks in personality he more than makes up for in high spirits and command of craft. Pick to click here: the cautionary wisdom of *Trouble with a Capital "T"*. *S.S.*

**SYLVIA:** *Surprise.* Sylvia (vocals); vocal and instrumental accompaniment. *Give 'em Rhythm; Victims of Goodbye; Isn't It Always Love; Love Over Old Times; I Just Don't Have the Heart; It's*



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**Still Here**; and four others. RCA AHL1-4960 \$8.98, © AHK1-4960 \$8.98.

Performance: Crystalized  
Recording: Very good

Sylvia J. Kirby Allen (that's her full name) may have just cut her hair off to normal human length, but she's still being groomed as a Crystal Gayle clone. Only thing is, Crystal prances through her songs on little fawn feet, and Sylvia plods through hers more like Bullwinkle than Bambi.

Nevertheless, Sylvia tries to copy Gayle's vocal nuances—on one of the tunes here, *Isn't It Always Love* (not the Karla Bonoff song), she even attempts that coy little end-of-phrase upturn Crystal uses so magnificently on *The Blue Side*—and sometimes she comes up a winner. But never has an album been more inappropriately named. There is not even a hint of surprise on "Surprise"—just eight supper-clubbish ballads, an Elvis Presley-type rhythm number, and a promising mood piece that peters out emotionally. *A.N.*

**THOMPSON TWINS: *Into the Gap*.** Thompson Twins (vocals and instrumentals). *Hold Me Now; Doctor! Doctor!; The Gap; Sister of Mercy; No Peace for the Wicked*; and four others. ARISTA A8-8200 \$8.98, © AC8-8200 \$8.98.

Performance: Antisynergistic  
Recording: Fine

Is there an antonym for "synergy"? Certainly the concept applies to the Thompson Twins' fourth album, "Into the Gap." All the positive elements—the slick arrangements, the yin and yang of acoustic and synthesized percussion, the bell-like clarity and resonance of the recording—add up to considerably less than the sum of the parts. The album goes flat because it lacks the binding energy to bring these elements together. As it is, Tom Bailey's lead vocals are about as bracing as a glass of beer left out overnight. The various pleasant details here, such as the Eastern motif of the title track, awash in castanets and tambourines, the celestial harps of *Hold Me Now*, or the ringing percussion that seems to be everywhere, just never coalesce. *M.P.*

**STEVIE RAY VAUGHN AND DOUBLE TROUBLE: *Couldn't Stand the Weather*** (see Best of the Month, page 84)

**GENE WATSON AND HIS FAREWELL PARTY BAND: *Little by Little*.** Gene Watson (vocals); the Farewell Party Band (instrumentals). *Little by Little; The Chesapeake Bay; Leavin' Been Comin' (for a Long, Long Time); Forever Again*; and six others. MCA MCA-5440 \$7.98, © MCAC-5440 \$7.98.

Performance: Sure shot  
Recording: Very good

There may be a tad too much of Merle Haggard in Gene Watson's tender-

tough vocals, but one thing you can't deny: when Watson sets out to sing a country song, he tells it sweet, he tells it clean, and he tells it straight—and then he gets the heck gone. In other words: my kind of guy. *A.N.*

**DENIECE WILLIAMS: *Let's Hear It for the Boy*.** Deniece Williams (vocals); vocal and instrumental accompaniment. *Next Love; Haunting Me; Blind Dating; Black Butterfly; Wrapped Up; Don't Tell Me We Have Nothing; Picking Up the Pieces; I Want You; Whiter Than Snow; Let's Hear It for the Boy*.

COLUMBIA FC 39366, © FCT 39366, no list price.

Performance: A delight  
Recording: Excellent

It has not taken Deniece Williams long to establish herself as a major pop star, and "Let's Hear It for the Boy," an album that shares its title with her recent hit single, demonstrates why. Williams not only has a fine voice, she also knows exactly how to use it—when to let it loose and when not to. There is no screaming here, just fine vocalizing and first-rate arrangements. *C.A.*

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## JAZZ



**ROSEMARY CLOONEY AND WOODY HERMAN: *My Buddy*.** Rosemary Clooney (vocals); Woody Herman and His Orchestra. *Summer Knows; I'm Beginning to See the Light; My Buddy; I Believe in Love*; and four others. CONCORD JAZZ CJ-226 \$8.98, © CC-226 \$8.98.

Performance: Too many cooks  
Recording: Quite good

Rosemary Clooney and Woody Herman each have a half-dozen albums on the Concord label, and teaming them up seems like a logical step, but "My Buddy" does neither artist full justice. Don't misunderstand, this is a nice album of Clooney tunes and merry melodies, but Herman's band sounds a lot better when it is up front, and Clooney's delivery is not enhanced by having to compete with an orchestra that sounds as if it is bursting to bloom on its own. On the other hand, while I prefer to hear Clooney and Herman separately, this album is worth a listen. C.A.

**MILES DAVIS: *Decoy*.** Miles Davis (trumpet, synthesizer); Branford Marsalis (soprano saxophone); John Scofield (guitar); others. *Robot 415; Code M.D.; What It Is; Freaky Deaky*; and three others. COLUMBIA FC 38991, FCT 38991, no list price.

Performance: Contrived  
Recording: Good

Marred by synthesized mannerisms and downright ennui, Miles Davis's new album, "Decoy," is yet another disappointing release from the once-so-vital trumpeter. Only occasionally does Davis approach his past greatness, and when one thinks of those earlier accomplishments the present output appears particularly dismal. Saxophonist Branford Marsalis and guitarist John Scofield provide a few worthwhile moments, but there is little here to inspire anyone. C.A.

**STÉPHANE GRAPPELLI: *Just One of Those Things*.** Stéphane Grappelli (violin); Martin Taylor, Marc Fosset (guitar); Patrice Caratini (bass); Alan Ganley (drums); Chris Karan (tabla). *Blue Moon; Cheek to Cheek; Them There Eyes*; and eleven others. ANGEL DS-38063 \$12.98, © 4XS-38063 \$9.98.

Performance: Suave  
Recording: Excellent

Here is the great jazz violinist Stéphane Grappelli in another of his impeccable

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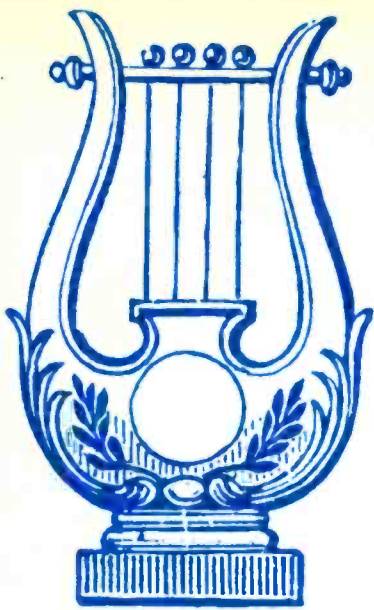
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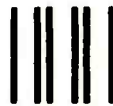


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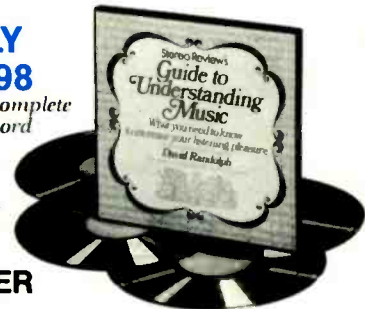
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**ALBERTA HUNTER: *Young Alberta Hunter.*** Alberta Hunter (vocals); instrumental accompaniment. *How Long Sweet Daddy, How Long?, Your Jelly Roll Is Good;* and twelve others. STASH ST 123 \$8.98 (from Stash Records, P.O. Box 390, Brooklyn, N.Y. 11215).

Performance: Fine  
Recording: Good enough

These are recordings from the 1920's by Alberta Hunter, who was then also in her twenties. On side one there are acoustical recordings from the early years of that decade, and while the sound can be bumpy and tubby, the ever-sassy Alberta rings through as clear as a ribald bell. The second side, recorded electrically, is true vintage Hunter and is much easier to listen to. If I'm not mistaken, Hunter is singing some of these same songs today. She's just fine as she sashays through songs like

*Gimme All the Love You Got* and *Your Jelly Roll Is Good* backed by such admirers as Fats Waller, Sidney Bechet, Louis Armstrong, and Fletcher Henderson. The liner notes by Chris Albertson are as entertaining as the recital. *P.R.*

**BUDDY RICH: *The Magic of Buddy Rich.*** Buddy Rich (drums); the Buddy Rich Band. *Red Snapper; Time Will Tell; Dancing Men; Cottontail;* and three others. HMC HM 830 724 \$8.98 (from Hice Music, 5457 Monroe Road, Charlotte, N.C. 28212).

Performance: Energetic as ever  
Recording: Good

As one of the Grand Old Men of the Big Band era, Buddy Rich continues to release the kind of unselfconsciously raucous and free-form albums that most of his contemporaries timidly abandoned years ago. This latest is another example of the irrepressible Rich in a high-flying recital that features him in several of his incredible drum solos, along with members of his band taking turns on their instruments for solo numbers. Quintessential Rich would have to be a track such as *Cottontail*, in which everyone swings out as if it were 1946. *P.R.*

**DENNY ZEITLIN: *Tidal Wave.*** Denny Zeitlin (piano); John Abercrombie (electric guitar); Charlie Haden (bass);

Peter Donald (drums). *Chelsea Bridge; Promenade; Hotline;* and four others. PALO ALTO JAZZ PA 8044-N \$8.98.

Performance: Riveting  
Recording: Very good

There is a lot of electric undercurrent in the title track of pianist Denny Zeitlin's new album, "Tidal Wave," and I like what I hear. It is not the mindless electronic hip-hop we get from Herbie Hancock. Here there is substance—not surprisingly, considering the presence of John Abercrombie and Charlie Haden. Zeitlin himself has always combined an extraordinary technique with more than fleeting musical thoughts, and in this release he delivers that blend in a context that is in good part acoustical. *C.A.*

**In a few words**

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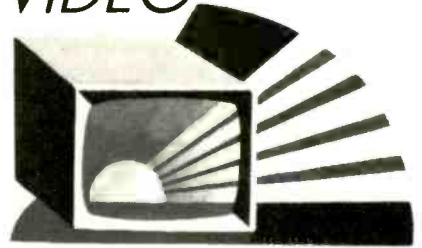
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## VIDEO



**LET'S BREAK.** A Visual Guide to Breakdancing. I.M.A. IMAV-301 VHS and Beta \$39.95 (from I.M.A., Inc., 5514 Satsuma Ave., North Hollywood, Calif. 91601).

Performance: Worthy  
Recording: Unprofessional

The punk set introduced "slam dancing," but it was a fad that never really got off the floor, so to speak. Breakdancing is quite another matter. Requiring great dexterity and rhythmic finesse, this style has risen from ghetto streets to downtown streets, TV commercials, and the silver screen. Street breakers even gave a command performance for Queen Elizabeth. In major cities throughout the country, breakdancers are busy delighting lunchtime crowds by doing their thing on cardboard mats. You may have seen them, and now you can join them, because "Let's Break" will teach you how to perform body waves, back glides, hand spins, and, yes, even "the worm."

I can't tell you how effective these lessons are, since I am not about to start spinning around on my back, but it all looks deceptively easy as three young people, Tony, Frank, and Sue, go through all the right motions at various speeds. I don't care for the stagey setting, which features chicken wire, graffiti, and litter for ghetto atmosphere, but the production is smooth and enough time is spent on each routine to convince me that you could learn a thing or two from this tape. *C.A.*

**DOLLY PARTON:** *Dolly in London.* Dolly Parton (vocals); vocal and instrumental accompaniment. *Baby, I'm Burning; Jolene; Two Doors Down; Applejack;* and thirteen others. PIONEER ARTISTS LaserDisc EP \$24.95.

Performance: Big-time show biz  
Recording: Good

Despite an extremely generous song selection and a huge back-up band, "Dolly in London" has very little to do with music. It's a star turn, a stylized ritual for both performer and audience (and now home viewers) in which we get to observe an icon on display. Dolly Parton, the icon in question, does indeed sing here, sometimes quite prettily, but she seems to have not the slightest emotional connection with anything she's doing. It doesn't really matter, however, since she's a Star, and all she has to do is stand there and look decorative, which, of course, she does. *L.M.*

# NOBLE CELLO SONATAS

*Yo-Yo Ma and Emanuel Ax seem to draw from each other the ultimate in expressiveness and beauty of tone*

*by Richard Freed*

**T**HERE is probably no more beloved piece in the entire literature of the cello than Beethoven's A Major Sonata, and it is given a very loving performance by cellist Yo-Yo Ma and pianist Emanuel Ax in a new CBS release that also includes the Sonata No. 5, in D Major. Both sonatas are presented in the warmest light, the overall approach representing a remarkable balance of intensity and expansiveness.

The "ma non tanto" in the marking of the A Major's opening allegro is observed very scrupulously, lending a degree of weight without ponderousness to the unfolding of the noble themes. The scherzo here, perhaps more than in any other recording of the work, seems the ultimate source of the intimate style and particular coloring we think of now as Brahmsian, and the final movement is charged with an exuberance that is not allowed to become hectic.

It is just about impossible to be unaware of the performers themselves while listening to this recording, for their playing is highly virtuosic in the best sense of that term. In the slow movement of the D Major, in particular, Ma and Ax seem to be playing not merely *with* each other but *to* each other, drawing from each other the last degree of expressiveness and beauty of tone. The close-up sonic focus allows all the glories of the music-making to come through richly and clearly.

**BEETHOVEN:** *Cello Sonata No. 3, in A Major, Op. 69; Cello Sonata No. 5, in D Major, Op. 102, No. 2.* Yo-Yo Ma (cello); Emanuel Ax (piano). CBS IM 39024, © IMT 39024, © MK 39024, no list price.

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David Hall  
George Jellinek  
Stoddard Lincoln**



**Uto Ughi: superb Beethoven**

**BACH: *Six French Suites*.** Ton Koopman (harpsichord). CALIG CAL 30 442/43 two discs \$23.96 (from Audiosource, 1185 Chess Drive, Foster City, Calif. 94404).

Performance: Warm  
Recording: Very good

When an organist shifts his attention to the harpsichord, the results are apt to be stiff and labored. Not so with Ton Koopman. He understands the expressive qualities of the harpsichord perfectly and has come up with a warm and intimate reading of these warm and intimate suites. And how refreshing it is to hear rhythmic alterations used subtly for expressive effect. The harpsichord here, a copy of a 1728 Christian Zelle made by Martin Sassmann in 1975, has a rich, glowing tone that is especially suitable for this music. *S.L.*

**BEETHOVEN: *Violin Sonata No. 9, in A Major, Op. 47 ("Kreutzer"); Violin Sonata No. 5, in F Major, Op. 24 ("Spring")*.** Uto Ughi (violin); Wolfgang Sawallisch (piano). RCA ● CRC1-4956 \$9.98, © CRE1-4956 \$9.98.

Performance: Persuasive  
Recording: Splendid

Whoever persuaded the well-known conductor Wolfgang Sawallisch to be the pianist in what appears to be Uto Ughi's first sonata recording ought to be congratulated. Sawallisch and Ughi make a terrific team: their altogether ex-

ceptional rapport in these sonatas produces results that are not only superb but downright noble. There is plenty of real chamber-music give-and-take in these performances, subtly sustaining momentum, building intensity, and always showing as much regard for sheer beauty of tone as for expressiveness.

This is an impassioned yet aristocratic statement of the *Kreutzer*, the greatest of all violin sonatas, and the sweet lyricism of the well-loved F Major is also conveyed with an unselfconscious elegance that brings out substance as well as charm. There can probably be no "definitive" performance of such works, but I don't think there is another pairing of these sonatas as persuasive as this one, and I'm sure there is none in the same league with respect to the warm, vivid sound of this disc. *R.F.*

**BRAHMS: *Piano Concerto No. 1, in D Minor, Op. 15*.** Emanuel Ax (piano); Chicago Symphony Orchestra, James Levine cond. RCA ● ARC1-4962 \$12.98, © ARK1-4962 \$12.98; © RCD1-4962, no list price.

Performance: Eloquent  
Recording: Good, but a shade distant

**BRAHMS: *Piano Concerto No. 1, in D Minor, Op. 15*.** Alexis Weissenberg (piano); Philadelphia Orchestra, Riccardo Muti cond. ANGEL ● DS-38008 \$12.98, © 4XS-38008 \$9.98.

Performance: Sinewy  
Recording: Bright and clear

Emanuel Ax in collaboration with James Levine and the Chicago Symphony produces a singularly moving and communicative interpretation of this mighty masterpiece of Brahms's youth. Pianist and conductor are both expert chamber-music players, and it is a chamber-music spirit that they bring to their performance without in any way diluting the concerto's expressive power. The opening movement goes with great sweep and passion, and for once the piano emerges from the orchestra in its opening bars rather than being glaringly spotlighted in front. As for the slow movement, this is by far the most tenderly eloquent reading I have ever heard. Only at the gypsy-style opening of the finale do I sense even the slightest letdown.

My only reservation about this disc—minor in the face of its musical merits—is about a slight lack of presence in the recorded sound that closer microphone placement, perhaps just a foot and a half, might have remedied. Having produced recordings in Chicago's Orchestra Hall myself, I suspect that the margin for error in achieving proper presence is a slim one.

There are no sonic presence problems in the performance by Alexis Weissenberg and Riccardo Muti on Angel. "You

are there" with a vengeance for this one, with powerful sound and extroverted playing to match. If it's fire and brimstone you want in this music, here it is. For me, the whole thing is a bit hamfisted in both the keyboard and orchestral departments. *D.H.*

**F. COUPERIN: *Ordre No. 26, in F-sharp Minor*.** L. COUPERIN: *Suite in G Minor*. MARCHAND: *Suite in D Minor*. Igor Kipnis (harpsichord). NONESUCH 78021-1 \$11.98, © 78021-4 \$11.98.

Performance: Grand  
Recording: Good

Armed with a formidable battery of ornaments and rhythmic alterations, plus his own original variants for the repeats, Igor Kipnis turns in a grandly ornate performance of these three magnificent suites. Not only is the style appropriate, but so are the fine instruments from the Museum of Fine Arts in Boston. The Couperin works are recorded on a Coucher (1680) that was enlarged by Blanchet (1758) and rebuilt by Taskin (1781). The Marchand is played on a handsome 1756 harpsichord by Henri Hensch. This is French harpsichord music at its most French. *S.L.*

**DVOŘÁK: *Legends, Op. 59*.** Rochester Philharmonic Orchestra, David Zinman cond. NONESUCH ● 79066-1 \$11.98, © 79066-4 \$11.98.

Performance: A joy  
Recording: A-1

Like the Slavonic Dances, Dvořák's set of ten *Legends* began life in a piano-duet format, and, although they lack the zest of the dances, the *Legends* are imbued with a spontaneous lyricism akin to Schubert's. David Zinman and the Rochester Philharmonic play with delicacy, warmth, and spirit, and their recording benefits from expert digital mastering in an ideal acoustic surround. Highly recommended! *D.H.*

**HANDEL: *Water Music (complete)*.** The English Concert, Trevor Pinnock cond. ARCHIV ● 410 525-1 \$10.98, © 410 525-4 \$10.98; © 410 525-2, no list price.

Performance: Compelling  
Recording: Terrific

If you do not already have a complete *Water Music* on early instruments, get this one. If you do, consider getting this one anyway. The performance is strong

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and starchy, and the sound is fabulous, especially the horns and oboes. Certainly the English Concert is one of the best Baroque orchestras playing today. *S.L.*

**MAHLER: *Symphony No. 7, in E Minor ("Song of the Night")***. Concertgebouw Orchestra, Bernard Haitink cond. PHILIPS ● 410 398-1 two discs \$23.96, © 410 398-4 two cassettes \$23.96; © 410 398-2 two discs, no list price.

Performance: Lyrical  
Recording: Over-reverberant

Bernard Haitink's second go-around with this problem child among the Mahler symphonies finds him at his best with the passionately lyrical aspects of the end movements, which are the really knotty parts of the score. The chamber-music elements in the scoring of much of the scherzo also elicit Haitink's sensitive musicality and a kindred response from the Concertgebouw musicians. But as a total reading this one fails to hold my interest the way Leonard Bernstein's did in his memorable 1966 Columbia recording or James Levine's remarkable RCA set. *D.H.*

**MARCHAND: *Suite in D Minor*** (see F. COUPERIN)

**MENDELSSOHN: *Violin Concerto*** (see Best of the Month, page 83)

**MOZART: *La Finta Semplice***. Helen Donath (soprano), Rosina, Teresa Berganza (mezzo-soprano), Giacinta; Jutta-Renate Ihloff (soprano), Ninetta; Thomas Moser (tenor), Fracasso; Anthony Rolfe Johnson (tenor), Polidoro; Robert Holl (bass), Cassandro; Robert Lloyd (bass), Simone. Salzburg Mozarteum Orchestra, Leopold Hager cond. ORFEO ● S 085 84 4K four discs \$35.92.

Performance: Hearty  
Recording: Superb

*La Finta Semplice* was Mozart's third opera, written in 1768 when the composer was all of twelve years old. It was also his first *opera buffa* and his first attempt at a full-length stage work. Musically it is a brilliant achievement, full of characterful arias, lively, expressive recitative, and tidy, variegated finales. But though the plot is drawn from no less a master than Goldoni, it is a confusing welter of silly, pointless episodes. Only the conventions of *commedia dell'arte* could give a stage production some sort of intelligibility.

As it happens, this is not a stage performance. It stems from a concert reading that makes uncommonly good sense of the music, thanks to a strong cast and an energetic but discreet conductor in Leopold Hager. Occasionally, Hager's Mozarteum Orchestra plays too loud for comfort, but neither its number nor its texture is too heavy. There is always enough energy on tap, and the lyric moments flow naturally and sweetly.

As Rosina, the "pretended dummy" of the title, Helen Donath sings a clean

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London Philharmonic

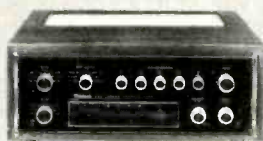
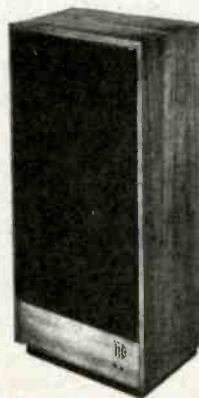


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line with sure technique, though with some whiteness of tone; her part has the most coloratura, which Mozart didn't yet use with much nuance. Jutta-Renate Ihloff's saucy soubrette Ninetta stems from the same Central European ethos, but Teresa Berganza's smoky Giacinta suggests warmer temperament. The liveliest men are the basses, Robert Lloyd as the bluff, plebeian Simone and Robert Holl as the stuffy but vehement Cassandro. Anthony Rolfe Johnson's slightly watery tenor makes for an amusing portrait of Polidoro.

The digital recorded sound is well balanced, and it is enhanced by some of the quietest pressings ever encountered in an opera album. *John W. Freeman*

**PROKOFIEV: Alexander Nevsky (see Best of the Month, page 84)**

**RIMSKY-KORSAKOV: Scheherazade, Op. 35; Capriccio espagnol, Op. 34.** Orchestre Symphonique de Montréal, Charles Dutoit cond. **LONDON** 410 253-1 \$11.98, © 410 253-4 \$11.98; © 410 253-2, no list price.

Performance: Very good  
Recording: Slightly diffuse

I have yet to hear a disappointing recorded performance from Charles Dutoit. He may not scale the heights at all times, but the consistency of fine execution and spirited playing that he elicits from his orchestra in Montreal is a source of pleasure to these ears.

I was delighted to hear the opening of the *Capriccio espagnol* taken at a smart pace, genuinely evocative of *zapateado* style. The remainder of the piece, with its brilliant solo cadenzas for the first-desk players, goes in comparably brilliant style. I only wish that the rather reverberant church acoustic of St. Eustache hadn't made for a somewhat diffuse-sounding low end of the orchestral spectrum.

This same acoustic does wonders for the sea music in *Scheherazade*, however, and for the marvelous give and take of strings and brass in the *Story of the Kalendar Prince*, but again, the big climaxes of the *Festival at Baghdad* are somewhat diluted. It is a joy, though, to hear the music of *The Young Prince and the Young Princess* played with a cool and wholly transparent lyricism that for me restores to these pages all their original freshness. *D.H.*

**SAINT-SAËNS: Violin Concerto No. 3 (see Best of the Month, page 83)**

**SCHUBERT: Piano Sonata No. 9, in B Major, Op. 147 (D. 575); Piano Sonata No. 11, in F Minor, D. 625.** Sviatoslav Richter (piano). **VOX CUM LAUDE** D-VCL 9026 \$7.98, © D-VCS 9026 \$7.98.

Performance: Compelling  
Recording: Excellent

In February 1979 Sviatoslav Richter gave several recitals in Tokyo that were recorded digitally for Melodiya by JVC.



# Subwoofer

## Man's best friend meets the audiophile's best friend.

A puppy may be man's best friend. Woof, Woof. . . But, now I've got a new friend you can add-on to your stereo system that doesn't need to be taken on walks, washed or fed. But, it makes a great cocktail table for you when you're being fed, and oh what a woof it has.

### GREAT SOUND FOR EVERYONE

It's called a Subwoofer. And, normally it is the beloved pet of only the most ardent audiophiles.

It is not generally understood that it can be used with virtually any speaker systems in any stereo. And, in addition to substantially increasing and perfecting the bass response, it also has a significant impact on the midrange clarity too.

Before I tell you exactly how marvelous your stereo will sound when you connect this Subwoofer to it, there are two things you should know.

First, you'll be getting your new friend at a large discount. Over 50% off retail. And Second, you won't have to worry about paying vet bills.

Your new friend comes complete with a paid up health insurance policy in the form of a 5 year limited warranty from its father, Cerwin-Vega.

And, after 25 years, Cerwin-Vega certainly qualifies as the father of deep rich bass. Their disco systems have just about shaken California right into the ocean.

But, don't be misled. Cerwin-Vega bass is clean and tight; never sloppy or overpowering. It adds a feeling of depth and fullness to your music that you simply can't get with conventional two or 3-way speaker systems.

### HERE'S WHAT IT DOES

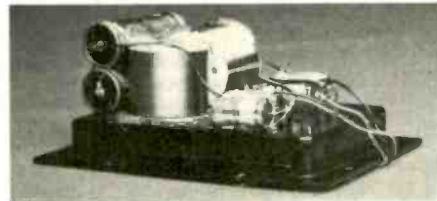
Basically, the problem with most speaker systems is that the bass overpowers the system. In a 3-way system, a woofer may be crossed over at about 800hz. And, in a 2-way system as high as 2-3000hz.

So, the speaker must handle movements of up to an inch at frequencies below about 80hz, while at the same time attempting to reproduce the very fine vibration type movements of the midrange frequencies.

It is this difference in movements that causes both the bass to be weak or non-precise, and the midrange to become muddy. Even the best 3-way systems fall prey to these problems.

### PROBLEM SOLVED

It has a specially engineered crossover network that sends frequencies above



120hz to your regular speakers and reproduces just the mammoth movement frequencies from 120hz down to 29hz with a special floor firing dual wound super woofer. (If you have downstairs neighbors, this Subwoofer isn't for you.)

The woofer is a very special hybrid. It has a mammoth two inch voice coil which is about double the average size of a woofer in a two or 3-way system.

This large voice coil allows the speaker to make the very large movements required to reproduce the very low frequencies.

But, it would do a lousy job of reproducing midrange or high frequencies which is why, cost aside, manufacturers don't put big coils in normal woofers.

To make the massive movements, this woofer has a very large speaker magnet that weighs an incredible 112 ounces. This super magnet also makes the subwoofer system extremely efficient. (The

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sensitivity is 92db at 1 watt at 1 meter).

Finally, even the cabinet is special. It produces extremely high bass efficiency which is derived from the Helmholtz resonator design. In fact, this is the newest of Cerwin-Vega's Subwoofers, the SW12B and it has an increased output of 2db at 30hz over the original SW12.

So, whether you have two or three-way speaker systems, with 8", 10" or 12" woofers, you will find the sound and sonic differences staggering.

### EASY HOOKUP

It's easy to connect. You simply run both the right and left channels from your amplifier to the input terminals of the woofer. It works with any system from 15 to 125 watts per channel.

The signal is passed through its special massive crossover network to two totally separate voice coils on the woofer. Then you connect the speaker wires from your two stereo speaker systems to the output terminals on the Subwoofer and only the 120hz signals and above reach your speakers.

Placement of your regular speakers is just as critical as usual for stereo imaging, but the Subwoofer can be placed anywhere because low frequency material is totally nondirectional.

The Subwoofer makes a perfect end table or cocktail table. Its rich woodtone appearance matches any decor and it is 25½" long, 13¼" high and 16¼" wide.

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To order the new improved Cerwin-Vega SW12B Subwoofer risk free with your credit card, call toll free, or send your check, not for the \$332 retail price of the earlier SW12, but for just \$164.50 plus \$14 for postage and handling. Order No. 9714. CA res add 6% tax.

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Vox Cum Laude is now issuing a number of these performances, and the two here are especially welcome. Neither work is played very often, and neither is available elsewhere on records now except in the complete Schubert sonata sets by Walter Klien on Vox and Wilhelm Kempff on Deutsche Grammophon.

The F Minor is one of Schubert's unfinished works: he left it in three movements, the first of which breaks off at the beginning of the recapitulation. Both Kempff and Klien recorded that movement as completed by the late Erwin Ratz in his critical edition, but Richter stops where Schubert did in 1818. He adds an entire movement, however, between the scherzo and the finale, an adagio (D. 505) that Schubert probably intended to be the work's slow movement. It works beautifully.

Both sonatas are played with Richter's characteristic clearing away of everything superfluous in his probing for the Schubertian essence—which seems to materialize without coaxing. Since the audience seems to hold its breath before breaking out with applause, the applause could have been edited out, but it does not dispel the magical mood evoked by these remarkably compelling performances. The recording itself is lifelike, the pressing absolutely transparent. *R.F.*

**SCHUMANN: Kinderszenen, Op. 15; Kreisleriana, Op. 16.** Martha Argerich (piano). DEUTSCHE GRAMMOPHON 410 653-1 \$11.98, © 410 653-4 \$11.98; © 410 653-2, no list price.

Performance: Dramatic  
Recording: Vivid

Martha Argerich's coupling of these two Schumann works provides direct competition with the similar one by Alfred Brendel on Philips. Both of these superb artists are at their most characteristic in their respective performances of this music, and they provide intriguing contrasts with each other. Brendel is the more reserved and elegant, the more subtle and poetic, while Argerich is the more overtly impassioned and dramatic, probing deeply into Schumann's moments of shadow and half-light. DG's digital recording is close-up, crystalline, and extraordinarily vivid. *R.F.*

### Collection

**BEJUN MEHTA: Songs and Arias.** Handel: *Messiah: If God be for us; How beautiful are the feet. Semele: Where'er you walk. Judas Maccabeus: So shall the lute and harp awake. Solomon: What though I trace; With thee th'unsheltered moor I tread.* Schubert: *The Shepherd on the Rock.* Brahms: *Four German Folk Songs.* Britten (arr.): *The Last*

*Rose of Summer.* Bejun Mehta (boy soprano); David Shifrin (clarinet); Carol Rosenberger (piano); principals of the Los Angeles Chamber Orchestra. DELOS 410 653-1 \$17.98; © D/CD 3019, no list price.

Performance: Remarkable  
Recording: Outstanding

This is an astonishing recital. In his thoughtfully chosen repertoire the fourteen-year-old Bejun Mehta exhibits an assured musicality far more experienced singers might envy. His singing skills embrace virtually faultless intonation, expertly shaded *diminuendi*, and a whole arsenal of ornamentations, even a serviceable trill. And all this comes with a voice of freshness and sweet beauty that responds as readily to Handel's florid writing as it does to Schubert's spontaneous lyric muse or, for that matter, the austere Britten setting. Even the vocal registers are artfully blended.

Mehta sings the Schubert and Brahms songs in English translations. I say this by way of information, not complaint. In fact, I am not about to voice any insignificant reservations that might diminish my enthusiasm for his talent.

He gets excellent support from the top-rank West Coast instrumentalists here, and the recorded sound is in keeping with Delos's high standard. *G.J.*

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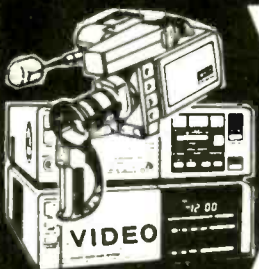
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#### Where's the Bass?

(Continued from page 75)

arate bass amplifier is also a useful feature, but it is found only in the more expensive systems.

While listening to good-quality, wide-range programs through the complete and properly adjusted three-piece system, you should find

*The next octave—down to 30 Hz—is very important for maximum realism, and it can make the difference between ordinary and really good sound.*

the low-bass content at least as solid and powerful as you would expect from a pair of full-size speakers of excellent quality. In addition, if you close your eyes, you should not have a clue about the physical location of the bass module.

When I try this experiment at home, I always find it difficult to believe that the deep bass from my system originates from the tiny satellites which can be held in the palm of my hand. Of course, it is *not* coming from them, but the woofer is out of sight, serving as a support for a potted plant, and 99 per cent of the time there are no psychological, visible, or audible clues to its existence or contribution to the total sound. Furthermore, the stage of sound that the system paints across the wall renders even the tiny satellites sonically invisible.

I believe that three-piece speaker systems can be an ideal solution to many installation problems. In my view, they have almost no inherent disadvantages. And if you can find that rarest of animals, a genuine subwoofer, you can transform a good speaker with ordinary bass to a good speaker with exceptional bass. Installation problems are less likely with true subwoofers since the crossover frequency of a real subwoofer should always be well below 100 Hz (50 to 60 Hz is often used). You may never actually hear a subwoofer in operation, but you certainly will feel it! □

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## Serious Turntables

by Ralph Hodges

**I**N the 1970's, when high-performance direct-drive turntables first became available, then plentiful, and then phenomenally cheap, with scarcely a discouraging word from reviewers, it seemed the belt-drive turntable was doomed to permanent second-class status, and the future of record playing was preordained. And it was, in a sense, for there are more direct-drive turntables on the market today than any other type. But high-end audiophiles are never ones to accept a technology just because it is there, and something about the *sound* of many direct-drive tables displeased them. True to form, they wasted no time debating the technical legitimacy of the direct-drive principle—and there is much to debate—but simply strode purposefully out of the temple to find and anoint their own messiah.

Today's anointed, although varying wildly in physical appearance, are almost all direct descendants of the original *belt-drive* AR turntable, a modest but excellent little machine cobbled together with 1950's technology from ideas suggested by an even older Stromberg Carlson design. (Recently AR shrewdly decided to resurrect the product with new cosmetics, to huge success.) The underlying principles are a smallish, low-torque motor that pulley-drives an elastic belt looped around a circumference of the platter. While the motor is fixed to the top plate, the platter and tone-arm support share a rigid subchassis within the turntable base, isolated from it (and therefore from the motor) by a relatively floppy spring suspension. It is the antithesis of direct drive, in which motor and platter are essentially unitized.

The pre-eminent high-end turntable of the moment is the Linn Sondek LP 12, a

product—and for years the only audio product—of a vigorous and well-founded company in Glasgow, Scotland. Its managing director and driving force, one Ivor Tiefenbrun, is given to not very well-founded statements—he declares, for instance, that the presence of a telephone in the listening room damages the sound quality, and that you can't hum along to a poor recording, particularly a digital recording.

In essence, the LP 12 is the old AR turntable made as well—and perhaps as expensively—as the company can devise. Linn has acquired — and inspired — many equally serious competitors such as Ariston, Entec, Heybrook, Oracle, Rega, and SOTA. And not too surprisingly, some high-volume mass-producers of turntables are going to belt-drive for their top models. (Thorens turntables have almost always been belt-drive models.) Most of these are heir, in whole or in part, to the same fundamentals of design. But no one has as yet been as successful as Linn in promulgating the idea, bizarre as it still seems to many audiophiles, that turntables sound different. Not cartridges, and not tone arms (which of course can demonstrably and measurably sound different), but turntables themselves, formerly believed the most docile and unobtrusive of audio components so long as they

didn't rumble or fluctuate in speed.

Sound different how? Listeners claiming to be sensitive to these things mention two subjective phenomena most frequently: detail, and the quality of silence. Silence, when the music calls for it, is one of the most appealing capabilities of the Compact Disc medium and one of the great shortfalls of LP's, which rarely deliver it with most record-playing systems even when it's written into the musical score. The high-end position is that the best turntables permit silence to be, if not actually heard, at least sensed. Yes, the usual surface noises will click and tick away in the plane connecting the loudspeakers, but behind that plane, where the performance is presumably taking place, there will be an air of velvety, comforting "blackness" that, expressively used, is as vital to music as, well, music itself.

Detail is both a matter of how much you can hear and how gratifying it is to hear it. The idea is that if you can discern every instrument in an ensemble with such sharp and stinging clarity that you want to back away from it, you've got either a bad recording or an upper-midrange peak in the system. But if you can perceive the contribution of every instrument in a way that draws you into the performance, marveling at and yearning for the alternating complexities and simplicities of timbre that good music and performances satisfy, you've got a fine recording and a superior turntable.

I think this is a fair representation of what you'd be advised to listen for when auditioning a high-end turntable. As for the numbers, like rumble, wow, and flutter, that might quantify "detail" and "silence" in a spec sheet, they're not quite in place yet, because what we are able to measure has still not been completely correlated to what we seem to be able to hear. But the specs are coming, and pretty fast, because no one likes designing a turntable in the dark any more than you like buying one in the dark. □



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