

# Stereo Review

JUNE 1985 • \$1.95

**SPECIAL REPORT:**  
**AMERICAN AUDIO**

**AN AMERICAN**  
**DREAM SYSTEM**

**MAXINE SULLIVAN,**  
**AN AMERICAN**  
**CLASSIC**

**LAB TESTS:**  
**HARMAN KARDON**  
**CASSETTE DECK**

**ACOUSTAT**  
**SPEAKER**

**KOSS**  
**HEADPHONES**

**...AND MORE**



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### SOUND

HANS FANTEL

# An Enduring Speaker Idea Takes a Cue From Concerts

In an industry which lives by compulsive innovation, something merely new is hardly news. What is more remarkable in the fast-changing field of audio is the persistence of an old concept proving its merit over and over again. That's what makes a classic.

Such classics, as noted in a recent column on the Acoustic Research AR turntable and the Ohm/Walsh loudspeakers, have a way of popping up in updated versions, adapted to changing technologies but basically true to their former and familiar selves. One old acquaintance now reappearing in modernized guise is the Bose 901 loudspeaker, whose basic design dates back to 1968 and owes its remarkable lifespan to the seminal ideas of Dr. Amar Bose, a professor at the Massachusetts Institute of Technology.

The kind of imagination basic to creative achievements—whether they be works of art or feats of engineering—usually requires a springboard—a distinctive point of departure. Dr. Bose began by throwing away most established notions about loudspeakers. Recognizing the fact that most of the sound heard at a live performance reaches the listener not directly from the sound source—the musicians' instruments—but by way of reflections from the walls and ceiling, Dr. Bose fashioned a loudspeaker to disperse the sound in a similar way. In consequence, the Bose 901 radiates most of its sound not toward the listener but toward the wall in back of the speaker and toward the sides of the room. Where the rearward and sideways sound hits the walls, it reflects as from a mirror. Surprisingly, this changes the apparent size of the listening room.

This curious effect is more easily understood by analogy to light reflections. Suppose you look at yourself in a mirror from a distance of five feet. Your reflection then appears not in the plane of the mirror itself; rather, your image seems to be standing five feet behind the mirror. Likewise, the sound reflections produced by the Bose 901 seem to be coming not from the wall but from behind the wall. This gives rise to the impression of sitting in a larger space than the actual dimensions of the listening room. Such spatial enlargement contributes to the illusion of hearing music in the kind of acoustic ambience for which most music was intended. To some degree, this is true of all multidirectional loudspeakers, but the Bose seems particularly effective in its ability to suggest an enlarged environment.

The speaker is unusual in other ways. There are no woofers and tweeters. The sound is generated by nine identical four-inch speakers, each separately chambered within the overall enclosure. To produce full-range sound from this array, a special equalizer is connected to the amplifier as an external device, modifying the amplifier's output to tailor it to the requirements of the speaker. As a Bose engineer explains, "Most speaker designers try

to get proper response by stretching the capabilities of the speaker materials. We think it's easier to compensate electronically for the mechanical properties of the speaker's structural elements."

The nine separate speakers in the single box are so arranged that a group of four radiates sound rearward to one side, another group of four radiates rearward to the other side, and a single speaker faces forward. According to Dr. Bose, this configuration results in a sound field similar to that experienced at a live performance. While the reflected rearward sound creates the feeling of a generous sonic ambience, the forward-facing speaker pinpoints the locations of the musicians on the imaginary stereo stage, thus contributing to what is called "stereo imaging." To be effective in this manner, the speakers must be positioned at least one foot distant from the wall at their rear. Attractive pedestals are available for this purpose, or the speakers may be hung from the ceiling, taking up no floorspace at all and being visually unobtrusive thanks to the uncommon compactness (21 x 12 x 13 inches).

The new version of the Bose 901—called the Series V—sells for \$1,400 per pair and differs from its precursors by alterations intended to fortify the speaker against the rigors of digital challenges. The dynamic range has been extended to a staggering 106 decibels—more than enough to brave sonic onslaughts from laserdiscs. Despite their masterly way with laserized fortissimi, these speakers nonetheless treat the subtler aspects of music with equal aplomb and do not lose their characteristic fullness and spaciousness of sound at moderate or low volume levels. And since the sound is broadly scattered, one may approach these speakers quite closely without ever feeling sonically blasted.

Their high efficiency allows these speakers to produce room-filling volume levels from relatively modest amplifier wattage. This is also significant for the digital present and future, for it allows the amplifier or receiver to stay within its rated power capacity and avoid overload distortion even at the spectacular sonic peaks typical of many digital recordings. Yet the speakers themselves remain unfazed by even the most powerful signals and can handle as much as 1,000 watts of power—and that third zero is no misprint!

In terms of musical veracity, the Bose 901 ranks with the finest and is convincing with any type of music. From solo piano to massive symphonic scores, everything sounds airy and open. Especially the sound of strings has a pleasing aura of roundedness. Part of this stems from the sound dispersion achieved by this unique design, which goes a long way toward the accomplishing the ultimately impossible task of making an orchestra believable in the living room.



## Future Perfect.

**M**any speakers today are supposed to be digital ready. But what happens if there's something beyond digital?

The original Bose® 901® Direct/Reflecting® speaker was ready for digital back in 1968, because it reproduced music with realism and impact never before heard from a speaker. Today's Bose 901 Series V system brings some 350 design improvements to the original's legendary performance. Unlimited power handling and very high efficiency make the Series V speaker ideal for listening to the best that audio currently has to offer—the digital compact disc. And while no one can predict exactly what the audio future has in store, one thing is certain: it will sound better on the Bose 901 system. Hear the legendary speaker that New York Times audio critic Hans Fantel says "...ranks with the finest and is convincing with any type of music" at your authorized Bose dealer soon. For more information, the name of your nearest dealer and a copy of Dr. Amar Bose's famous MIT lecture *Sound Recording and Reproduction* write: Bose Corporation, Dept. SP901, 10 Speen St., Framingham, MA 01701.

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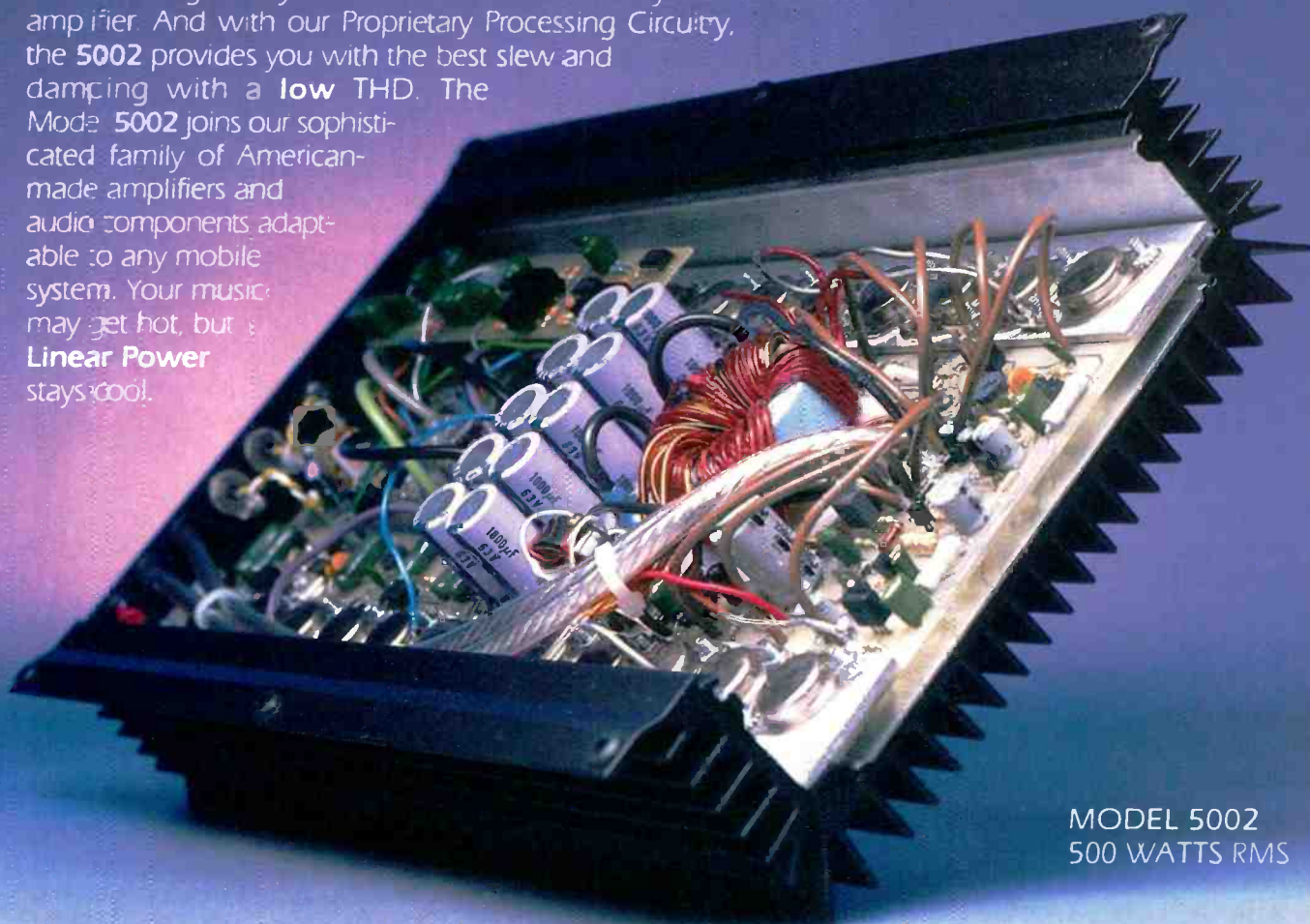
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CIRCLE NO. 7 ON READER SERVICE CARD

by Christie Barter and Gordon Sell

## THE NEW CARVER SPEAKER

Bob Carver, of Carver Corporation, has developed a full-range ribbon panel speaker with built-in Sonic Holography that works in the vertical plane as well as the horizontal plane. According to Carver, it "romps and stomps like vintage JBL, has the midrange of a Quad, hits like a K-horn [Klipschorn], has the high end of an Ionovac, images like none other, and is flat from 20 [Hz] to 20 [kHz]." He plans to sell the speaker this fall for \$1,275 a pair.



## HANDS ACROSS AMERICA

The organization known as USA for Africa (United Support of Artists for Africa), which has raised over \$44 million for hunger relief overseas—most of it from royalties earned by the hit record *We Are the World*—has set its sights on hunger here at home. The new project, called Hands Across America and scheduled for Sunday, May 25, envisions a human chain 4,000 miles long stretching from the Statue of Liberty in New York to the Pacific Ocean at Los Angeles. For information call 800-USA-9000. Record buyers can contribute by picking up the single *Hands Across America* recently released by EMI America.

## DOLBY SR—AS GOOD AS DIGITAL?

Dolby Labs has announced a new system, called Dolby SR, for professional analog master recordings. The SR stands for "spectral recording," the company explains, and "the system employs a powerful coding algorithm sensitive to variations in signal spectrum as well as to level changes. . . ." Dolby claims that the system can "give professional analog recorders a useful dynamic range equal to or greater than that of 16-bit digital recording systems." Director of special projects Bill Mead says that "Dol-

by SR eliminates the audible dividing line between analog and digital [recordings]."

## MUSIC NOTES

Capitol Records has released a set of twelve albums under the overall title "Rock of Ages," encompassing a quarter-century (1950-1974) of rock, pop, and soul. . . . MGM/UA has introduced a "Musicals Great Musicals" series of a dozen videocassette titles drawn from MGM's archives and specially priced at \$29.95. Included are film classics like *Kiss Me Kate*, *An American in Paris*, *Brigadoon*, and (for the first time in stereo) *Meet Me in St. Louis*. . . . EMI has contracted with La Scala, Milan, for five opera recordings to be produced over a period of five years. The first, with sessions scheduled to begin next month under the direction of Riccardo Muti, will be Verdi's *La Forza del Destino*. . . . Dunhill is being revived as a CD-only label under the Dunhill Compact Classics logo. The initial release includes titles by Dionne Warwick, Judy Garland, Jerry Lee Lewis, Sam Cooke, John Coltrane, Lionel Hampton, and Lena Horne.

## STING FOR PEACE AND LIFE

The video version of Sting's hit single *Russians* on A&M is being released in the appropriate overseas markets with subtitles in French, German, Dutch, Portuguese—and Russian. According to a spokesman for the label, A&M is "attempting to make one artist's personal message of hope for world peace available to an international audience." . . . Sting is also featured in I.R.S. Records' "Live! For Life," a charity album whose proceeds are earmarked for the AMC Cancer Research Foundation. A compilation of previously unreleased live and studio recordings, the album also includes tracks by the Bangles, R.E.M., Bob Marley, Squeeze, and Stewart Copeland.

## TECH NOTES

Acoustic Research is introducing "Powered Partners," a powered speaker system intended for use with video components and portable CD players as well as for surround-sound systems. . . . Ad-

vent has introduced a line of hi-fi and video cabinets that match the style and finish of the company's speakers. . . . *Japan Industry Newsletter* reports that Alps Electronics will be producing 10,000 R-DAT (rotary digital audio tape) heads each month by this fall. Those heads are going to have to go somewhere, so it seems safe to assume that consumer digital audio tape decks will be appearing in the not-too-distant future. . . . Sharp has developed a VCR that can play tapes at twice the normal speed without the high-pitched "chipmunk" effect that normally occurs when you speed up a tape. . . . Madisound Speaker Components in Madison, Wisconsin, has set up a computer bulletin board for audio hobbyists. If you have a 300- or 1200-baud modem, just tell your computer to call 608-767-2585.

## HONORS

The Welsh dramatic soprano Gwyneth Jones, recently heard nationally as the Marschallin in a Metropolitan Opera broadcast of Strauss's *Der Rosenkavalier*, has been made a Dame of the British Empire. . . . The Académie du Disque Français has awarded the American conductor James Conlon its Grand Prix for his Erato recordings of music by Poulenc. . . . Winners of the Arturo Toscanini Artistic Achievement Awards, given for the first time this year, were James Levine (conducting), Jon Vickers (vocal/male), Marilyn Horne (vocal/female), Nathan Milstein (violin), Rudolf Serkin (piano), Janos Starker (cello), and the Juilliard String Quartet (chamber group). . . . The Berklee College of Music in Boston is awarding honorary degrees of Doctor of Music to jazz pianist Herbie Hancock and to rock star Paul Simon.



## Polk's Revolutionary SDAs



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



# "The Genius of Matthew Polk Brings You the Breathtaking Sound of the SDAs"

*"Breathtaking...a new world of hi fi listening"*

Stereo Buyers Guide

*"Literally a new dimension in sound"*

Stereo Review Magazine

*"Mindboggling...Astounding...Flabbergasting"*

High Fidelity Magazine

**T**he experts agree: Polk's revolutionary TRUE STEREO SDAs\* sound dramatically better than conventional loudspeakers!

**"They truly represent a breakthrough"**

Rolling Stone Magazine

Matthew Polk's critically acclaimed, Audio Video Grand Prix Award winning SDA technology is the most important fundamental advance in loudspeaker technology since stereo itself. Listeners are amazed when they hear the huge, lifelike, three-dimensional sonic image produced by Polk's SDA speakers. The nation's top audio experts agree that Polk SDA loudspeakers always sound better than conventional loudspeakers. Stereo Review said, "Spectacular...the result is always better than would be achieved by conventional speakers." High Fidelity said, "Mindboggling...Astounding...Flabbergasting... We have yet to hear any stereo program that doesn't benefit." Now the dramatic audible benefits of Polk's exclusive TRUE STEREO SDA technology are available in 4 uniquely superb loudspeaker systems, the SDA-1A, SDA-2, SDA CRS and the incredible new SDA SRS.

**"Spectacular... Impressive Achievement"**

Stereo Review Magazine

The design principles embodied in the SDAs make them the world's first true stereo speakers. When the big switch was made from mono to stereo, the basic concept of speaker design was never modified to take into account the fundamental difference between a mono and stereo signal.

What is the difference between a mono and stereo speaker? It's quite simple: the fundamental and basic concept of mono is that you have one signal (and speaker) meant to be heard by both ears at once. However, the fundamental and basic concept of stereo is that a much more lifelike three-dimensional sound is achieved by having 2 different signals, each played back through a separate speaker and each meant to be heard by only one ear apiece (L or R). So quite simply, conventional mono loudspeakers are designed to be heard by two ears at once while true stereo loudspeakers should each be heard by only one ear apiece (like headphones). The revolutionary Polk SDAs are the only TRUE STEREO speakers engineered to accomplish this and fully realize the astonishingly lifelike three-dimensional imaging capabilities of the stereophonic sound medium.

**"An amazing experience."**

High Fidelity Magazine

Words alone cannot fully describe how much more lifelike TRUE STEREO reproduction is. Reviewers, critical listeners and novices alike are usually overwhelmed by the magnitude of the sonic improvement achieved by Polk's Stereo/Dimensional Technology. You will hear a huge sound stage which extends not only beyond the speakers, but beyond the walls of your listening room itself. The lifelike ambience revealed by the SDAs makes it sound as though you have been transported to the acoustic environment of the original sonic event. Every instrument, vocalist and sound becomes tangible, distinct, alive and firmly placed in its own natural spatial position.

You will hear instruments, ambience and subtle musical nuances (normally masked by conventional mono speakers), revealed for your enjoyment by the SDAs. This benefit is accurately described by Julian Hirsch in Stereo Review, "...the sense of discovery experienced when playing an old favorite stereo record and hearing, quite literally, a new dimension in the sound is a most attractive bonus..." Records, CD's, tapes, video and FM all benefit equally as dramatically. SDAs allow you to experience the spine tingling excitement, majesty and pleasure of live music in your own home.

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

High Fidelity Magazine

You must hear the remarkable sonic benefits of SDA technology for yourself. You too will agree with Stereo Review's dramatic conclusion: "the result is always better than would be achieved by conventional speakers...it does indeed add a new dimension to reproduced sound."

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\*U.S. Patent Nos. 4,489,432 and 4,497,064. Other patents pending

Where to buy Polk Speakers? For your nearest dealer, see page 134.

by William Livingstone



With Ron Fone (left), president of Acoustic Research in Canton, MA.

## Audio in America

FROM time to time a reader writes in to request a list of American audio equipment manufacturers so that he can "buy American." We've never supplied such a list because "buying American" is tricky. Do you give more support to the labor force and overall economy of the United States by buying a component manufactured in Hong Kong for an American company or by buying one made by American hands in a Japanese-owned factory in California or Tennessee?

We don't have an answer to that question and have never based our buying advice on the country of origin of equipment. Like the vast majority of our readers, we are most interested in what a component does, how well it does it, and whether it represents good value at its price.

Still, there is so much talk about technological agendas, balance of payments, the "hollowing" of American industry, and so forth that we have decided to focus three issues on the state of audio in the United States, in Japan, and in Europe. We are beginning in this issue by examining our own nation's audio. Reflecting the interests of our readers, we are leaning more heavily on technology and products than on manufacturing and marketing.

When I joined the staff of this magazine in 1965, hi-fi was largely an American business. By common consent, the standard reference speaker was the AR-3 from Acous-

tic Research, and big names in the field were such American brands as Bozak, Fisher, and Scott. Transistorized equipment was new and controversial, and Norelco had just introduced the cassette. European products that were highly regarded here included Garrard turntables from England. Japanese companies were just entering the market.

At my first lunch with Avery Fisher in 1965 he said, "The era of the audiophile is over." Mr. Fisher, the founder and president of Fisher Radio Corporation, was one of the most important manufacturers in the industry, so I had to believe what he said, but I wasn't sure what he meant.

I think he was telling me that audio had become a mass-market phenomenon and no longer had the do-it-yourself excitement it had had when he was a professional book designer who pursued good sound as an audiophile hobbyist. In 1965 we still had a lot of readers who found excitement in building components from kits sold by such companies as Acoustech, Dynaco, Eico, and Heath, but kit-building soon went the way of the hula hoop. Many founder-operated companies, including Fisher Radio and Acoustic Research, were sold to conglomerates from this country or abroad, and the face of the American audio industry changed.

The love of music, however, continues to turn people into audiophiles. Some of them, like Mr. Fisher, also become equipment manufacturers. Acoustic Research is still in the front line of speaker manufacturers, but its competitors today include some founder-operated companies that did not exist twenty years ago. Few of today's American audiophiles are soldering their own components, but new audio technology excites them in other ways.

For a look at the face of American audio today, read Steve Birchall's article on page 64. A system composed entirely (well, almost entirely) of American-made components is described by Michael Smolen on page 74, and finally, a list of American equipment manufacturers, drawn up by William Burton and other members of the staff, begins on page 78.

Next month, Japan! □

## Stereo Review

WILLIAM LIVINGSTONE  
Editor in Chief

LOUISE GOOCH BOUNDAS  
Managing Editor

SUE LLEWELLYN  
Art Director

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ROMAN BEYER  
Vice President and Publisher

Advertising Director: Winston A. Johnson  
(212) 719-6039

National Manager: Richard J. Halpern  
(212) 719-6037

Eastern Manager: Charles L. P. Watson  
(212) 719-6038

Account Manager: Mary Anne Holley  
(212) 719-6008

Classified Advertising: (212) 503-5999

Midwestern Managers: Arnold S. Hoffman  
Dirk Barenbrugge  
(312) 679-1100

Western Director: William J. Curtis  
Regional Manager: Charles D. Bieber  
(818) 784-0700

Tokyo Office, Iwai Trading Co., Ltd.  
603 Ginza Sky Heights Building, 18-13,  
Ginza 7-Chome, Chuo-Ku, Tokyo, Japan 104  
Account Manager: J. S. Yagi, (03) 545-3908

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CIRCLE NO. 46 ON READER SERVICE CARD

## CD Buying Woes

As the owner of two Compact Disc players and 355 discs, I am extremely bitter about the worsening availability of CD releases. Since spring 1985, the selection, prices, availability, and frequency of new CD releases have been worsening, and one record-store owner I spoke to said the situation won't "bottom out" until late this year.

I have no intention of tolerating any further worsening in the situation. If I don't see substantial improvement in the CD crisis by mid fall, I will buy no more Compact Discs ever again. Conventional records may have surface noise, but at least you can buy the hits while they're still new. At the present rate, don't expect Arcadia's album to appear on CD until Simon le Bon is well into his mid thirties (around 1994).

PHIL COHEN  
Bay Harbor, FL

Last June I purchased a CD player and by year's end had bought thirty-eight CD's, with the expectation that prices would fall in 1986. With 1986 barely begun, CD prices have jumped

10 to 20 percent. This is a slap in the face and also an insult to my intelligence. There is no reason for a price increase except for supply and demand. Well, my demand just stopped until prices fall.

STANLEY ADAMS  
Texarkana, AR

*Isn't supply and demand reason enough?*

## Lefty Conductors

Having once had the occasion to conduct our local symphony orchestra in a selection at a pops concert, I created an uproar when I picked up the baton *with my left hand!* "Scandal!" said the purists. So I was somewhat relieved and vindicated to see on page 69 of the April issue a photo of Sir Georg Solti conducting left-handed. Can this be? Am I truly not an exception? Or was the photo reversed?

VICTOR G. SONNINO  
Midland, MD

*The photograph was not reversed. We are assured by London Records, which*

*supplied the photo, that although Solti is right-handed, he does occasionally hold the baton in his left hand as shown.*

## The Bangles

I must take exception to the mini-review of the Bangles' new album in April's "Record Makers." Especially disturbing is the line, "Yes, the greatest all-girl band since Ina Rae Hutton's . . ." How about the Go-Go's? Not only did the Go-Go's record three critically acclaimed albums, but they also wrote almost all of their songs. The Bangles cannot begin to compare with the Go-Go's until they write quality songs themselves. The Go-Go's were the greatest all-girl band in rock during the past decade. Baltimore thanks drummer Gina Schock for her work with the Go-Go's.

BRIAN J. HOJNACKI  
Baltimore, MD

## The Sound of Video

I wanted to express how much I enjoyed April's feature on "The Sound of Video." I did, however, have difficul-

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How'd you get those pants so tight?  
Don't know what you're doin'  
But you must be livin' right  
We got some places to see  
I brought all the maps with me  
So jump right in... Ain't no sin  
Take a ride in my machine  
City traffic movin' way too slow  
Drop the pedal and go...go...go  
Goin' ridin' on the freeway of love  
Wind's against our back  
Goin' ridin' on the freeway of love  
In my pink Cadillac" \*

**FREEWAY OF LOVE**  
Aretha Franklin

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**maxell**

ty finding mention of any differences in performance relating to the speed at which the material was copied.

JONNIE SANTOS  
San Diego, CA

*Technical Editor Gordon Sell replies: All three of the VCR's were tested at their highest speeds only. Some experienced listeners claim to hear a very slight degradation of sound quality when hi-fi soundtracks are recorded and played back at the slower speeds, but the difference is nothing like what is audible when the linear audio track is switched from standard to slow speed.*

At the risk of seeming pedantic, I would like to correct the one inaccurate statement in April's "The Sound of Video." It was noted that in the tests done on Saturday, "David Clark operated the machines and instructed the listeners, so these tests were technically blind but not double-blind (which implies that neither the tester nor the listener knows the identity of the sources being compared)."

One of the innovations of the ABX comparator used for these tests is that

the identity of source X is known only to a semiconductor memory, so a listening test using the comparator remains "double-blind" even when a single listener is working entirely alone. Therefore, the Saturday results were as controlled, convincing, and powerful as Friday's.

DAVID CARLSTROM  
Director, ABX Company  
Huntington Woods, MI

The cover of the April STEREO REVIEW pictured three videotape recorders. I think it should be clear to you that if STEREO REVIEW readers were interested in videotape recorders—or, for that matter, anything to do with video—we would buy video magazines. An article on video equipment in STEREO REVIEW is a waste of paper. I am into stereo to get as far away from TV as I possibly can. I for one vote against video, but if a survey of your subscribers shows otherwise, I'll concede.

JOHN L. MILEWSKI  
Milwaukee, WI

*Concede, Mr. Milewski. We treat video from an audiophile's point of view.*

## Buying Guide

When we provided information to STEREO REVIEW on the forthcoming H. H. Scott 959DA Compact Disc player, it was slated to have a headphone jack, a sampling rate of 88.2 kHz, and random-access programming for up to ninety-nine selections. These specifications were accurately reported in the 1986 *Stereo Buyers' Guide* and in the excerpts from the guide in the February STEREO REVIEW.

Unfortunately, when the 959DA finally went into production, it did not have the headphone jack, the sampling rate was the standard 44.1 kHz, and programming was limited to fifteen selections. On the positive side, extra steps were taken to enhance the player's resistance to mechanical vibrations, and a combination digital and analog filter was added to improve the high-frequency response and minimize phase shift. But by this time the out-of-date information was already in circulation.

It is unfortunate that one of your readers chose to buy the 959DA based on the printed information alone. I offer our sincere apologies, and we will



**Chances are you never thought a turntable like this was possible**

Audiophiles have long recognized that the best sounding turntables are belt driven, suspended sub-chassis designs. However these have usually been simple manual designs without the features most users desire.

With the CS5000, the Black Forest craftsmen from Dual have bridged the gap between performance and convenience. Designed and built entirely in W. Germany, the CS5000 combines a four-point floating chassis with a micro-processor belt drive system, resulting in a turntable that is simple to set up and operate yet able to produce superb sound quality.

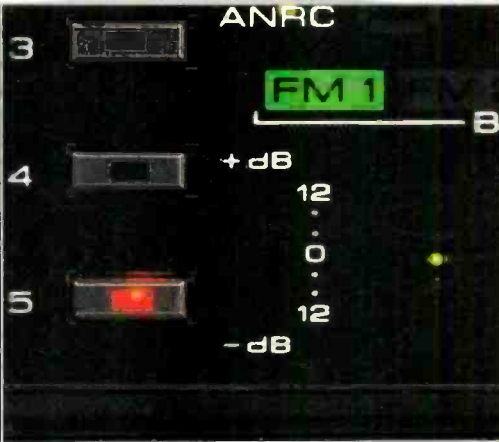
The CS5000 also features an entirely new tonearm design called OPS (Optimum Pivot System). A refinement of the legendary Dual Ultra Low Mass Design, it eliminates distortion produced by warped or eccentric records. And a unique VTA headshell is standard, for adjusting the Vertical Tracking Angle for any pick-up cartridge.

This German crafted high technology and performance, with elegant wood base in walnut or satin black finish, is surprisingly affordable. To find out more about the turntable no one thought possible visit your authorized Dual dealer or write:

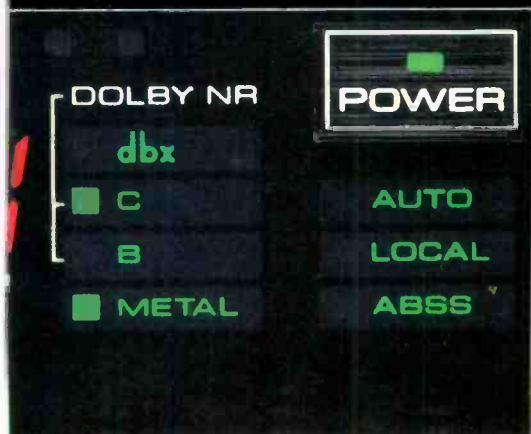
**Dual**  **NEW TECH** **ortofon**  
DUAL/ORTOFON 122 Dupont St. Plainview, N.Y. 11803



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## LETTERS

make every effort to prevent situations like this from happening again.

In any case, the 959DA is a competent performer and compares well with similarly priced machines on the market. I am confident that it will provide years of excellent service.

BARRY ROSSEN  
*Marketing Services Manager*  
H. H. Scott, Inc.  
Woburn, MA

I was certainly glad to see that you incorporated the "Equipment Buying Guide" in your February issue. I have looked over each page several times, however, but could find no reports or guidance on reel-to-reel tape recorders. This is my type of recording, and I hope you aren't saying reel-to-reel is outdated.

GEORGE EAGLIN  
Hermitage, TN

*Well, somebody had to tell you.*

### *Barbra's Broadway*

Considering such other "Broadway" albums as Nancy Wilson's "From

Broadway with Love" and Peggy Lee's "Latin à la Lee," I take exception to your choice of Barbra Streisand's "The Broadway Album" as one of April's "Best of the Month." But perhaps this is Streisand's "finest" recording, considering all those earlier albums revealing her thin upper register and high-pitched tones.

Streisand has become such a cult icon that it is most sacrilegious for any reviewer to point out her many weaknesses. Since she is now ahead of Frank Sinatra for "the longest span of No. 1 albums," she has become the new Pop Emperor. "The Broadway Album" is the emperor's new clothes.

GINO FALZARANO  
Staten Island, NY

### *CD Thumps and Groans*

I have become very enthusiastic about Compact Discs, and I really don't mind the greater clarity the medium provides for such brief noises as the turning of music pages. I have become aware of a more disturbing distraction on some classical discs, however—very audible moans and groans that seem to

originate from the conductor or soloist. It would be of value to your readers if reviewers would indicate the presence of such noises.

BOB PRESTIANO  
San Angelo, TX

David Hall's April review of Giuseppe Sinopoli's recording of Mahler's Fifth Symphony was right on target. It's "first-choice" to my ears too!

I'm puzzled, however, by his sole criticism of the CD, namely, "the conductor's vocal embellishments." What exactly was he referring to? I hear no vocalizing of any kind throughout the entire recording, though in some of the more vehement passages occasional "thumps" are audible, perhaps from a foot stomping on the podium. Is that what Mr. Hall meant?

A. E. GASPARAITIS  
Oak Park, IL

*David Hall reports that the "vocal embellishments" he heard on the Sinopoli CD were precisely the sort of moans and groans that Mr. Prestiano objects to—and that Mr. Gasparaitis is lucky enough not to notice.*

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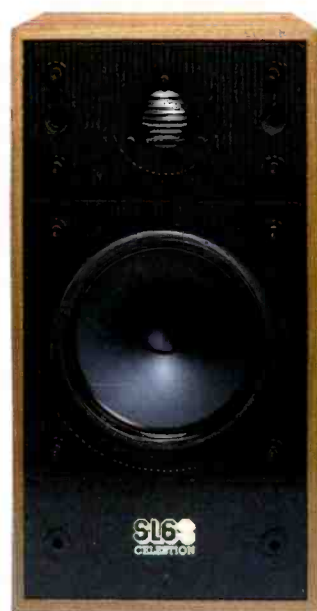
## NEW PRODUCTS



### KEF

The KEF Model 107 speaker system comes with KEF's Universal Bass Equalizer (K-UBE), a separate signal processor that enables a user to adjust bass rolloff frequency (from 20 to 50 Hz), rolloff damping, and contour. The K-UBE's equalization module also creates an inverse of the 107's low-frequency response. The speaker has two 10-inch polypropylene woofers that drive a common bass cavity vented at the top of the cabinet. The movable midrange/tweeter subenclosure is rounded to reduce diffraction effects. Pivoting the subenclosure alters the stereo image even when the cabinet is flat against a wall. Overall system frequency response is rated as 20 to 20,000 Hz  $\pm$  2 dB. The KEF 107 can be used with amplifiers rated between 50 and 300 watts into 4 ohms. Price: \$3,900 per pair, including the K-UBE. KEF, Dept. SR, 14120-K Sullyfield Circle, Chantilly, VA 22021.

Circle 120 on reader service card



### Celestion

An improved version of the Celestion SL6, the SL6S speaker system has a 6½-inch dual-surround woofer that crosses over to its 1¼-inch aluminum-dome tweeter at 2,800 Hz. For better bass transient response, the woofer has a soft, bonded-rubber outer ring and a firmer PVC inner ring. The voice coil has been redesigned to reduce inductance. The lighter-weight tweeter (the SL6 used a copper dome) is said to improve system sensitivity, which is rated as a sound-pressure level of 84 dB measured at 1 meter with an input of 1 watt. Frequency response is rated as 75 to 20,000 Hz  $-$  3 dB.

The cabinet's Medite panels have been made thinner to reduce energy storage, and a figure-eight bracing panel is used to improve rigidity. Dimensions are approximately 14¾ inches high, 8 inches wide, and 10½ inches deep. Price: \$899 per pair. Stands designed for the SL6S are \$120 per pair in wood, \$180 per pair in metal. Celestion, Dept. SR, Kuniholm Dr., P.O. Box 521, Holliston, MA 01746.

Circle 124 on reader service card

### Boston Acoustics

The A40 Series II acoustic-suspension speaker from Boston Acoustics has a 6½-inch woofer and a ¾-inch tweeter. The woofer's polymer diaphragm is said to be more resistant to cone breakup for a smoother response. The ferrofluid-cooled tweeter is mounted flush with the baffle to eliminate diffraction. The thin, contoured grille is said to eliminate early reflections that can blur imaging. Frequency response is rated as 65 to 20,000 Hz  $\pm$  3 dB and sensitivity as 89 dB sound-pressure level at 1 meter with a 1-watt input. Rated power-handling capability is 40 watts. The speaker is finished in simulated-rosewood or black vinyl and measures 13½ inches high, 8¼ inches wide, and 7½ inches deep. Price: \$160 per pair. Boston Acoustics, Dept. SR, 247 Lynnfield St., Peabody, MA 01960.

Circle 123 on reader service card

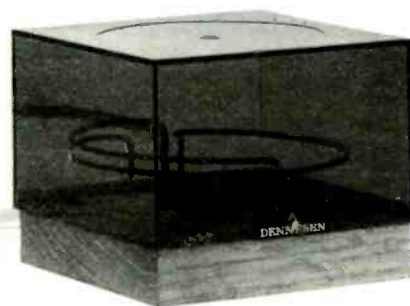


### Dennesen

The compact Gamma-Loop FM antenna from Dennesen is designed to receive radio signals from all directions when placed on its wooden base, but it can be made directional by placing it on any of its three usable sides. When it is on its side, the plane of the loop determines its sensitivity, so it can be rotated to aim in any desired direction. The

cover is smoke-gray plastic. Price: \$19.95, plus \$9.95 for the connecting cable and transformer. Dennesen Electrostatic, Dept. SR, 715 Hale St., Beverly, MA 01915.

Circle 123 on reader service card



# The Equalizers

These new equalizer/amplifiers from Cooustic add a new dimension to car audio. By including either the model EQ-1010 or the model EQ-1020 in your mobile audio system you can program 4 different spectral settings into memory for instant recall. You no longer need to fumble with mechanical sliders until you discover the best settings for each musical style. With a Cooustic equalizer, if you are listening to your favorite classical FM station and you need 1 or 2 dB of bass boost while leaving all other functions flat, you can program memory 1 for recall by a simple touch of a button. If your prized jazz cassette recording has too much noise, just cut

15 KHz by 2 or 3 dB and enter the setting into memory 2 for recall.

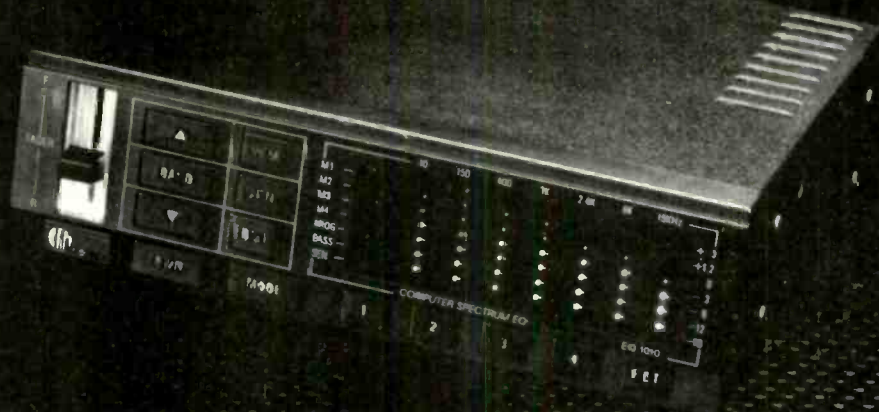
The EQ-1010 and EQ-1020 have built-in spectrum displays, to indicate the music's spectral density for easy identification of frequencies needing a boost or a cut. Both the EQ-1010 and EQ-1020 have an auxiliary input for digital compact disc players. The EQ-1020 also has dbx\* noise reduction, which is 100 times more effective than Dolby\*\* when listening to dbx-recorded music.

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\*dbx is a registered trademark of dbx, Inc.

\*\*Dolby is a registered trademark of Dolby Laboratories.

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## NEW PRODUCTS



### Linn

Linn's LK 1 microprocessor-controlled preamplifier switches inputs

from moving-magnet and moving-coil cartridges, a tuner, two tape decks, and an auxiliary source. Pushbuttons are

used to select inputs, balance and volume settings (preset volume levels can be saved in memory), and muting. A record control allows recording from one source while you are listening to another. All functions are performed by electronic components controlled by the microprocessor, with no mechanical switches or attenuators. The line-level input jacks use Cannon connectors. An infrared remote control is optional. The LK 1 measures 10½ x 10½ x 3½ inches. Price: \$725; remote control, \$75. Audiophile Systems, Ltd., Dept. SR, 8709 Castle Park Dr., Indianapolis, IN 46256.

**Circle 125 on reader service card**

### Rotel

Rotel's RX-870 AM/FM receiver is rated for 60 watts per channel minimum continuous rms output per channel into 8 ohms, both channels driven, from 20 to 20,000 Hz with less than 0.03 percent total harmonic distortion. It can also be used together with Rotel's RB-870 power amplifier in bridged-mono mode for a total of 180 watts per channel. The power-supply and output transistors in the RX-870 are designed for high current and high voltage, enabling it to be used with speakers presenting difficult loads, according to the manufacturer.

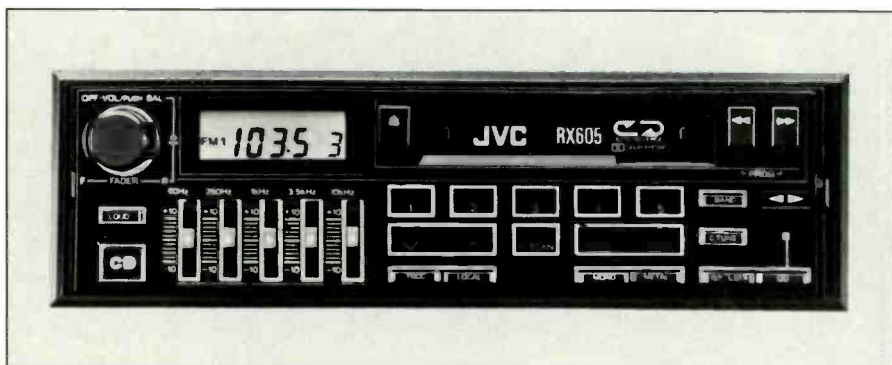
The preamplifier section has a "straight-line" design that is said to minimize noise and distortion. It can switch inputs from a CD player, one video sound source, either a moving-magnet or moving-coil cartridge, and two audio tape decks, which can be connected for dubbing in either direction.



The digital-synthesis tuner can store eight AM and eight FM stations in memory. Price: \$499. Rotel Audio of

America, Dept. SR, P.O. Box 653, Buffalo, NY 14240.

**Circle 126 on reader service card**



### JVC

JVC's KS-RX605, KS-RX305, and KS-R22 car stereo cassette receivers

have PLL quartz-synthesis tuning and Dolby B noise reduction. The CD-ready KS-RX605 (shown) includes a "disc in"

indicator. The slide-out unit has 22 watts of power, twenty station presets, preset scan, a five-band graphic equalizer, automatic FM noise suppression, a local/dx switch, and autoreverse in the tape player. Balanced, transformerless circuitry is said to increase power output and dynamic range while minimizing distortion. Price: \$479.95.

The KS-RX305 is a 22-watt receiver similar to the RX605 but without the equalizer and the theft protection of slide-out mounting. Price: \$349.95. The 8-watt KS-R22 has fifteen station presets, fader, music scan, autoreverse, LCD display, and separate bass and treble controls. Price: \$269.95. JVC, Dept. SR, 41 Slater Dr., Elmwood Park, NJ 07407.

**Circle 127 on reader service card**



**The Boston Acoustics polyamide dome.**

**So the high notes won't fade away.**

Conventional fabric tweeter domes are usually sealed by a coating. Trouble is, the coating can vary in quantity and uniformity. Worse, it can migrate, leaving pores that leak air. And it can age, changing dome stiffness. The result? A significant loss of high frequencies – and distortion of overall speaker frequency response.

At Boston Acoustics, we don't use coated fabric domes. Instead, our popular A150 three-way speaker, for example, has our exclusive CFT tweeter with a dome made of polyamide. While more costly than fabric, polyamide is nonporous. It also has excellent uniformity – for frequency response that's uniformly excellent. And with its long-term stability, a Boston Acoustics polyamide dome will sound just as good years from now as it does today.

Moreover, we fasten the voice coil to the dome with a rigid adhesive that will not deteriorate under the coil's heat. By contrast, commonly used pliable adhesives soften and change adhesion, compressing the tweeter's dynamic range. We even go to the extra cost of using flexible wires to connect the voice coil. They're far more resistant to breakage than ordinary solid wires, and won't resonate.

The Boston Acoustics polyamide dome is an important factor behind our reputation for accurate, undistorted frequency response and lifelike stereo imaging. Hear it in the A150 and other fine Boston Acoustics stereo speaker systems.

For complete information, including the location of your nearest dealer, just send your name and address to: Boston Acoustics, Inc., Department 150S, 247 Lynnfield Street, Peabody, MA 01960. (617) 532-2111.

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## AUDIO Q. AND A.

by Larry Klein



### Carver/Polk Compatibility

**Q** Are Carver's Sonic Holography technology and Polk's Stereo Dimension Array technology compatible? In other words, can I use Polk SDA speakers with a Carver Sonic Holography preamplifier or other component?

JIM JENNINGS  
Chicago, IL

**A** I've never tried a Carver/Polk combination, but I was sure that both the Carver and Polk companies had, so I gave them a call. Although the Carver circuit cancels interaural crosstalk electronically and Polk SDA speakers do it acoustically, both companies agreed that using them together provides an extended but somewhat exaggerated stereo sound stage. It was suggested that listeners to classical music might not find the effect realistic but that rock listeners might relish the total acoustic immersion and pseudo-psychodelic effects produced with some recordings. Ultimately, the question of "compatibility" between the Carver and Polk approaches seems to depend on the kind of music you listen to and how you like to hear it rather than the technologies themselves.

### Wet Playing LP's

**Q** I recently visited a friend who was dubbing some record albums onto cassettes. Before he played each disc, he would cover its surface with a film of water, using a sponge. Is there a sound reason for doing this, or has my friend been given some bad advice at some point?

JOE MICHAEL MOORE  
Clarkston, GA

**A** Perhaps ten to fifteen years ago, wet playing was briefly popular in Europe. In fact, Lenco, a Swiss company, even made a pivoted, tubular-arm water dispenser that wetted down the groove ahead of the stylus. The theory was that the water both cooled and lubricated the groove during play. I tried out the Lenco device with one of my favorite records, and it did seem to make the sound marginally quieter and smoother. To my dismay, however, on a subsequent dry play the record had acquired an unacceptably high noise level. It seems that the liquid turned the normal microscopic groove debris into vinyl mud and distributed it on the groove walls. If I had dried the record properly after the wet play, the problem might not have occurred.

In any case, for normal play with today's cartridges, the wet-play process seems risky while providing little or no benefit. It could be, however, that if your friend's purpose is to make one clean dub of a noisy, worn disc, wet play might be helpful.

### Tape Squeal

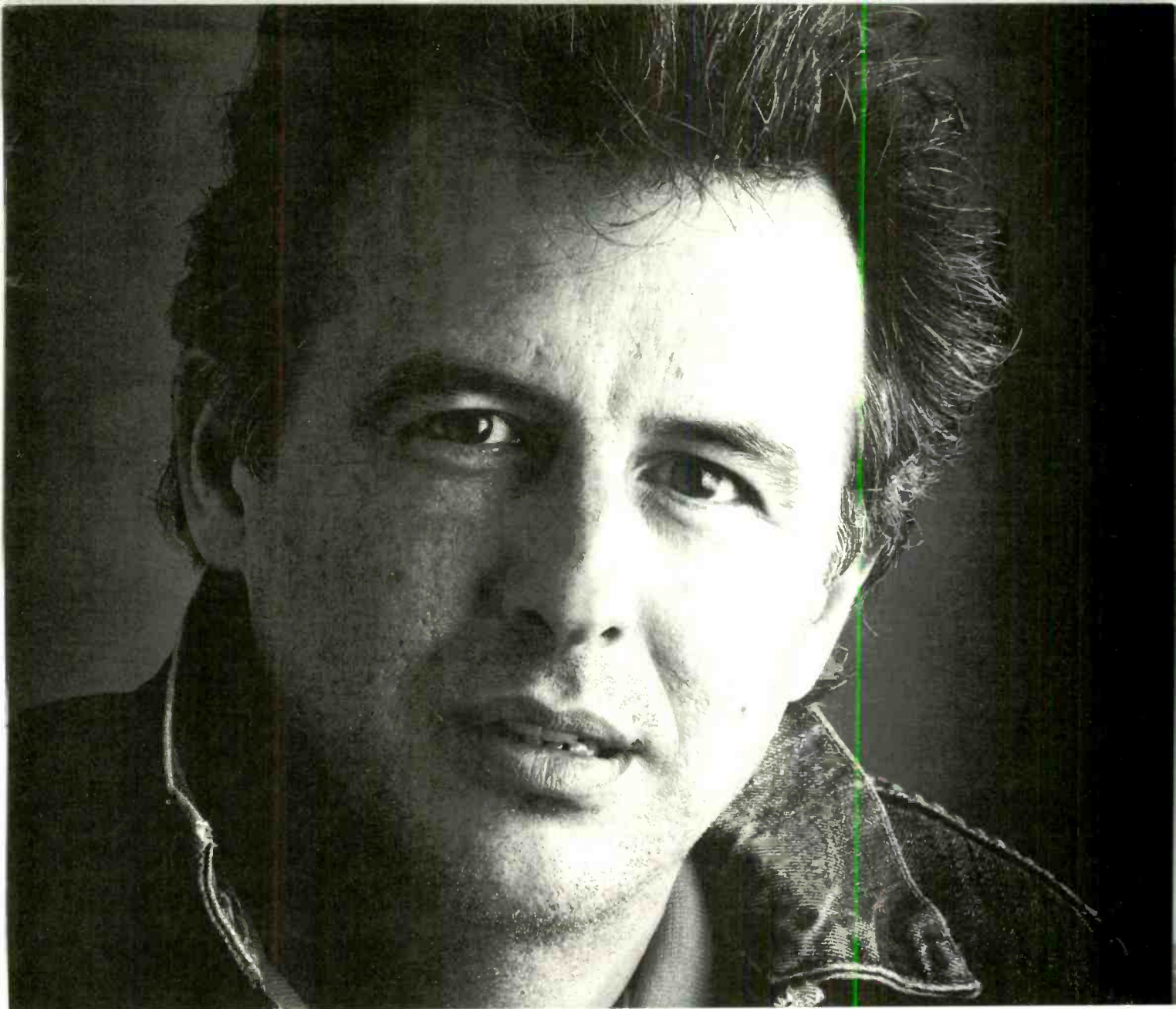
**Q** I often hear a high-pitched intermittent or continuous chirping or squealing noise on both prerecorded and home-dubbed cassettes. What is the cause, and is there a solution?

JOSEPH WASIELEWSKI  
Hilo, HI

**A** Tapes have been squealing since long before cassettes were invented. In the old days, when open-reel tape recorders all had built-in pressure pads, oxide buildup on the pads or heads created friction. Cleaning the pads and heads often solved the problem. But tape squeal sometimes occurred even in the newer machines with no pressure pads and even when the heads were clean. Excessive friction was still the culprit, usually because the lubricants added to the tape's oxide binder during manufacturing had dried up or deteriorated.

In my own more recent struggles with squeaking cassette tapes, I have discovered an additional squeal source. Sometimes the cassette's internal hubs will squeal at certain points during their rotation. This can frequently be cured by a touch of silicone lubrication (applied with a toothpick) at places where the rotating hubs touch the shell.

Your problem may lie elsewhere, however. After I lubricated the hubs and cleaned the internal pressure pad of the problem tape you sent to me, it still squealed on two different tape decks. I suspect that the noise reflects a lack of tape-surface lubrication and is inherent in the tape itself. Assuming that my diagnosis is correct, I would neverthe-



## “How Big An Amp Do I Really Need?”

Contrary to popular belief, lots of amplifier power isn't necessarily the solution to getting lots of dynamic range from your system.

Fact is, amplifier power alone has little effect on the dynamic range we hear in compact discs and other modern recordings. Your speakers have far more effect on dynamic range than the amplifier or any other component in your system.

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Compared to the KLIPSCH model, the other speakers required at least 30 times more power to achieve a normal listening level. And regardless of the total power consumed by the other speakers, the KLIPSCH model still had 20 dB higher output.

Are we suggesting KLIPSCH Loudspeakers have the widest dynamic range in the industry? You bet. In most cases, the addition of KLIPSCH Loudspeakers will be the most effective and efficient way to widen the dynamic range of your system. Our special compression drivers are the reason why. They give you more controlled imaging, greater clarity and wider dynamic range.

As these characteristics become higher priorities to your musical taste, we encourage you to compare KLIPSCH to any other speaker mated to any size amplifier. Decide for yourself what gives you the most for your money.

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## AUDIO Q. AND A.

less resist the temptation to apply lubrication to the tape surface; there's too high a risk that it would get into the machine's drive mechanism.

### Hot Wiring

**Q** Because of the layout of my system I have to run its connecting cables close to a cast-iron radiator. Will that have any long- or short-term effects on the wires or my components? Is there anything I can do to protect them?

DAVID DRUCKER  
Watertown, MA

**A** The worst that could happen, in the long term, is that the heat could dry out and crack the outer insulation on the wires. If you are worried about such a possibility, you can take protective measures using insulating foam tubing normally installed on hot-water pipes to prevent heat loss. You can insulate in reverse, so to speak, by threading your cables through foam sections cut to appropriate lengths.

Electronic components themselves, however, should *never* be installed close to or above a heat source. When a com-

ponent's own internally generated heat is reinforced by external heating, premature deterioration of its internal parts is likely to result. If any component installed close to a radiator or heating duct feels warmer than room temperature when it is *not* turned on, it should be relocated.

### The Proper Recourse

**Q** My car stereo cassette deck prefers to eat my tapes rather than play them. I've cleaned and re-cleaned the heads and rollers to no avail. Before I spend a fortune getting my player repaired, are there any other measures I should take?

DAVE REGARN  
St. Paul, MN

**A** Yes, why not visit the dealer who sold you the unit or write to the manufacturer and ask him for his suggestions? When there are questions about the behavior or misbehavior of specific units, the manufacturer or the dealer is *always* the best source of answers. I realize, of course, that it is difficult to get help from a company

that is no longer in business, whose only listed address is in Tokyo, or that doesn't answer its mail, and I'm pleased to do what I can under such circumstances. But unfortunately, there are always problems that I don't have ready solutions to.

### CD Hiss

**Q** Why do some of my Compact Discs have considerable hiss and others almost none? Is the hiss from the original studio master tape?

JIM PORTER  
Olympia, WA

**A** Yes, it is. The hiss varies with the quality of the master recording, and many older analog masters have a lot of hiss. But I'm puzzled as to why hiss is apparently so obtrusive on your system. Check to see that your treble level is not boosted too high and that the tweeter-level controls (if any) on your speakers are not turned up too high. Although the hiss level can be (and is) audible on some Compact Discs, rarely should it reach a level of annoyance.

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Charlie Derek, Station KRAV-FM.

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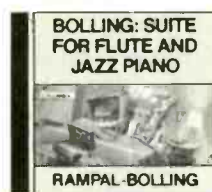
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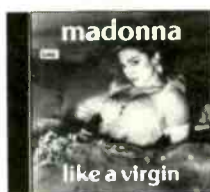
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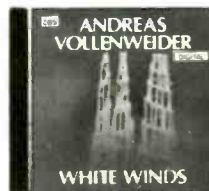
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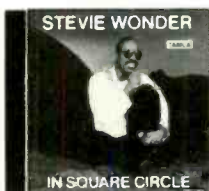
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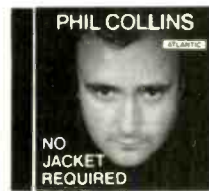
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333286

338616. Miami Vice—Music From the Television Series. G. Frey. #1 You Belong to The City; many more. (MCA)  
 339903. The Cars—Greatest Hits. Tonight She Comes; Drive; more. (Elektra)  
 341263. Enoch Light & The Light Brigade—Big Bands Of The Thirties. Begin The Beguine; more. (Project 3)  
 322008. Lindo Ronstadt & The Nelson Riddle Orch.—What's New. (Asylum)

323261. Lionel Richie—Can't Slow Down. All Night Long; Stuck On You; Hello; etc. (Motown)  
 340182. Philip Glass—Mishima. Original music from the film. (Nonesuch)  
 335547. Berlioz: Symphonie Fantastique. Barenboim, Berlin Phil. (Digital—CBS Masterworks)  
 331264. Bryan Adams—Reckless. #1 hit: Heaven; Run To You; etc. (A&M)

343160. Beethoven: Symphony No. 9 (Choral). Bruno Walter, Columbia Sym. (CBS Masterworks)  
 318089. Michael Jackson—Thriller. Billy Jean; The Girl Is Mine; etc. (Epic)  
 273409. Beethoven: Piano Sonatas. Vladimir Horowitz plays. Appassionata, Moonlight; Pathetique. (Columbia)  
 320499. The Police—Synchronicity. Winner of three Grammy Awards! (A&M)

341073. Steely Dan—A Decade of Steely Dan. Reeling In The Years; Hey Nineteen; more. (MCA)  
 337279. Placido Domingo—Save Your Nights For Me. Love songs. (CBS)  
 288670-398677. Barry Manilow—Greatest Hits. It's A Miracle; Mandy; etc. (Counts as 2—Arista)  
 322024. Huey Lewis & The News—Sports. Bad Is Bad; Heart & Soul; etc. (Chrysalis)

336578-396572. Bach: Flute Sonatas—Rampal; flute; Pinnock, harpsichord, etc. (Counts as 2—Digital—CBS Masterworks)  
 314443. Neil Diamond's 12 Greatest Hits, Vol. 2. You Don't Bring Me Flowers (with Barbra Streisand); etc. (Columbia)  
 340760. Stevie Nicks—Rock A Little. Top 10 Talk To Me; I Can't Wait; title cut; etc. (Modern)

328740. Mozart: Piano Concerto No. 26 (Coronation); Rondos. Murray Perahia and English Chamber Orchestra. (Digital—CBS Masterworks)  
 219477. Simon & Garfunkel's Greatest Hits. El Condor Pasa; Bridge Over Troubled Waters; etc. (Columbia)

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## KENWOOD KRC-999

by Julian Hirsch and Christopher Greenleaf

**K**ENWOOD'S description of the new KRC-999 car stereo AM/FM tuner and autoreverse cassette deck as "uniquely versatile" is something of an understatement. In fact, the wealth of circuit and control features in the KRC-999 would be noteworthy in the most deluxe home stereo receiver. An incredible number of controls have been squeezed onto the 2 x 7-inch front panel, and many more are contained in a motorized drawer that slides in and out at the touch of a button. Most of the buttons in the drawer and on the front panel serve at least two functions, depending on whether the radio or cassette section is being used. The illuminated markings change with the unit's operating status to show the current function of each control.

All the controls of the knobless KRC-999 are soft-touch pushbuttons. Operation of its digital-synthesis tuner is aided by a full complement of tuning indicators. Other displays show the status of the unit's special switchable operating modes, including the Automatic Broadcast Sensor System (ABSS), which responds to a loss of signal strength by scanning up until another receivable signal is found, and the Automatic Noise Reduction Circuit (ANRC), which blends the stereo channels at high frequencies on weak FM signals to reduce noise while retaining some degree of stereo separation.

Like many other car radios, the KRC-999 provides both manual and automatic tuning, but it also has an unusual feature called Auto

Memory, which at the touch of a button causes the tuner to scan the selected band and automatically store the frequencies of the first five stations that exceed its muting threshold. Afterwards, these stations can be recalled by touching the corresponding preset buttons. Each of the five preset buttons can be assigned to four different frequencies (three FM channels and one AM channel), for a total of twenty presets, and the feature is further enhanced by a 5-second Preset-Scan function.

When a cassette is loaded edge-wise into the slot at the top of the panel, most of the control markings change to represent cassette functions. The tape transport is solenoid controlled and silent during operation. Although the KRC-999 does not have a tape index counter, it has something even more useful—a row of seven lights that show the approximate playing time left on a tape (with a resolution of one-eighth of its total time). The tape sensor works even in fast forward or rewind. Illuminated arrows show the direction of tape motion and blink when the deck is in a high-speed mode. Other indicators show the selected noise-reduction system (Dolby B, Dolby C, or dbx) and playback equalization (normal or metal/chrome).

The KRC-999 has a number of convenient programmable tape functions, among them Index Scan, which samples the first 10 seconds of each recorded selection, and Tape Advance, which skips to the next selection or repeats the current track. And there is an Automatic

Blank Skip function: after 15 seconds of silence the tape is fast-wound to the next selection, or, if the silent portion comes at the end of the tape, the transport automatically reverses direction and plays the first selection on the other side of the tape. According to Kenwood, the KRC-999's "bi-azimuth, hyperbolic-curve tape head" provides optimum performance in both directions of tape travel by automatically re-aligning the head with each change in direction.

The memory system of the KRC-999 stores selected balance (left-right) and fader (front-rear) settings as well as two different volume settings, either of which can be recalled instantly. Instead of tone controls, there is a seven-band graphic equalizer operated by small toggle switches on the front edge of the slide-out drawer. The center frequencies are 60, 120, 250, 500, 1,000, 3,500, and 10,000 Hz, and the gain of each band can be adjusted  $\pm 12$  dB in 4-dB steps. Three different user-set frequency-response curves can be stored in memory for instant recall at the touch of a button. In addition, three factory-set response curves are always available. One is a "loudness" contour that moderately boosts both low and high frequencies independently of the volume setting, another supplies a midrange response modification to improve the sound of vocal music, and the third gives a flat response. A spectrum-analyzer mode converts the graphic equalizer into a real-time display of the program level at each center frequency, with a 0.5-second peak-hold function for easy recognition.

Fitting all these functions into the KRC-999's 14 square inches of panel space certainly represents an engineering tour de force. Kenwood's designers were not quite able to duplicate this achievement in packaging the receiver's electronic circuits, however. Although the KRC-999 has standard DIN dimensions and will fit into most modern dashboards, there is an additional "control unit" attached by several integral cables. This unit has no operating controls, so it can be installed beneath a car seat or under the dashboard. Since the front and rear audio outputs of the KRC-999 are



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# THE SILENT TREATMENT.

## WHY BOB CARVER'S MINIATURE RADIO STATION LEFT THE AUDIO PRESS SPEECHLESS AND HOW IT LED TO THE MOST COMPLETE STEREO TUNER EVER OFFERED.

The new Carver TX-11a Stereo AM-FM Tuner is a technical tour-de-force which further distances Bob Carver's unique products from traditional electronic components — and which can vastly enhance your musical enjoyment.

### TWO TECHNOLOGICAL INNOVATIONS.

The performance of the legendary TX-11 Asymmetrical Charge Coupled FM Stereo Detector Tuner is increased by the addition of Ultra High Frequency Wide Band AM Stereo circuitry. With the new TX-11a, AM stereo sounds as good as FM.

Yes, contrary to popular belief, most AM stereo stations have frequency response (20Hz-15kHz), separation (35dB) and signal-to-noise ratios (70dB) audibly indistinguishable from FM stations of equal strength. It's just that **only** Carver offers the technology to appreciate this hidden performance.

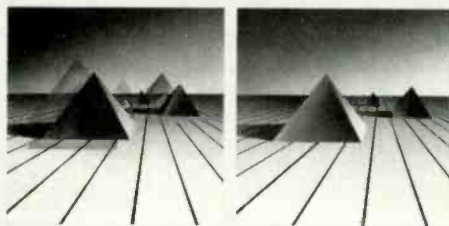
As for FM stereo, the TX-11a virtually eliminates multipath and distant station noise while providing fully-separated stereo reception with space, depth and ambience!

Bob Carver's Asymmetrical Charge Coupled FM Stereo Detector removes (without affecting stereo imaging, frequency response or dynamic range) the hiss, clicks, pops, "picket fencing" and the myriad other unpredictable noises which all too often disturb FM listening.

(Still interested in the story of the miniature radio station and how it impressed hard-to-impress audio critics? Read on. We'll get to it

after we explain why the quartz-synthesized TX-11a Stereo AM-FM Tuner will impress you in your own listening environment).

### A CLEANER, WIDER FM WINDOW ON THE WORLD.



Because of the TX-11a's Charge-Coupling and Leading Edge Detection technology, ownership may very well change your listening habits. Right now, you probably confine your FM listening to those stations which are strong and relatively interference-free, avoiding weak stations and those filled with distortion. Your options are therefore limited. The TX-11a can significantly expand your choices by recovering stations previously buried in hiss or prone to sudden tantrums of noise.

**Ovation Magazine** observed that the circuit, "... may well mean the difference between marginal reception of the station signals you've been yearning to hear and truly noise-free reception of those same signals, permitting you to enjoy the music and forget about noise and distortion."

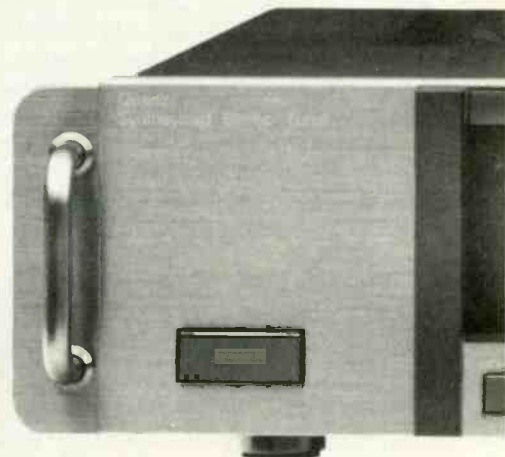
In **Audio Magazine**, Len Feldman said "The significance of its design can only be fully appreciated by setting up the unit, tuning to the weakest, most unacceptable stereo signals you can find, then pushing those two magic buttons."

"Separation was still there; only the background noise had been diminished, and with it, much of the sibilance and hissy edginess so characteristic of multi-path interference."

### WHY THE ASYMMETRICAL CHARGE-COUPLED FM STEREO DETECTOR GIVES NOISE THE SILENT TREATMENT.

Thirty years ago, the FCC turned clear mono FM into a substandard stereo medium (with fifteen times poorer signal-to-noise ratio) by approving a broadcast system that is extraordinarily prone to multipath and distant-station-noise.

This system separates stereo into two different bands. Unfortunately, the bands aren't pure Left and Right. Instead, one band is comprised of those parts of a stereo signal that are common to both channels, (L+R, or mono). The other signal, far more fragile and prone to interference, is the difference between the left and right signal (L-R). It bounces off buildings, hills and other objects, and wreaks havoc when



## CARVER

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Carver Corporation  
P.O. Box 1237 Lynnwood, WA 98046

recombined with the strong mono signal.

Bob Carver's Charge-Coupling circuit takes advantage of the fact that almost all noise and distortion is exactly 180 degrees out of phase with the signal it's part of. The TX-11a Stereo AM-FM Tuner cancels these "dirty mirror" images before they can reach your ears. That eliminates up to 85% of the potential noise found in distant or noisy stations.

But Bob wasn't satisfied and knew you wouldn't be either. So another circuit, the Leading Edge Detector, goes a step further by taking advantage of a little-appreciated FM phenomenon: Just 5% of the L-R signal actually contributes to the stereo experience. The rest simply gets in the way of skyscrapers and mountains.

The Carver leading Edge Detector operates only on this critical 5% of the L-R signal, filtering out noise and restoring just that part of the signal needed by our ears and brain to construct stereo imaging.

Blended back into the mono (L+R) signal matrix, a net reduction of 93% — or better than 20dB of noise reduction — is achieved. All ambient and localizing information is recovered. Only hiss and distortion are left behind. Or, as *High Fidelity Magazine* put it, "...clean, noise-free sound out of weak or multi-path-ridden signals that would have you lunging for the mono switch on any other tuner."



### THE LITTLEST AM RADIO STATION.

Before we describe the remarkable attributes of the TX-11a, we owe you the story that proves just how far performance can be extended when a component comes from Carver.

At a recent press conference, Bob Carver unveiled a small antenna connected to a very low powered AM stereo broadcast transmitter (C-QUAM format). Dubbed "Station CRVR," it sat next to a Carver Compact Disc Player and the same TX-11a that's on your dealer's shelves right now.

Bob Carver routed the Compact Disc's signal to the antenna for reception by the TX-11a, and also directly to a preamplifier.

In front of America's top stereo writers, Bob switched back and forth between the transmitted signal (as received by the TX-11a) and the direct CD signal. All listeners had difficulty distinguishing between the outputs of the CD player and the TX-11a Stereo AM-FM Tuner!

Most could tell no difference at all!

### HOW AM STEREO GETS THE SILENT TREATMENT WITH THE TX-11a.

- \* *Unique de-emphasis curve*
- \* *Whistle Stop cancelling circuit*
- \* *Pilot Signal cancelling circuit*
- \* *Ultra-low noise balanced station detector*
- \* *Very wide band, minimum phase intermediate frequency amplifiers.*

Think of it. Compact Disc frequency response and freedom from noise with AM stereo and the TX-11a. Only Carver could pull it off. But then only Carver could do the same for FM, too.

### HUMAN-ENGINEERED FEATURES AND CONVENIENCE.

Many tuners with far less exclusive circuitry than the TX-11a have far more complicated exteriors. Bob Carver wanted to make tuning stations easy, not impress you with flashing lights or complex programming.

So thirteen presets, wide/narrow band selectors, automatic/manual scanning and the buttons which activate the remarkable Charge-Coupled circuits (Multipath and Noise Reduction) are all tastefully inset into the burnished anthracite metal face. Full instrumentation including digital station frequency readout, 6-step 10dB-interval signal strength LED's and other monitor functions is recessed behind a panel, visible but not garish.

The result is performance without theatricality. Access without complication.

A tuner *High Fidelity Magazine* called, "By far the best tuner we have tested..."

### CLEAR THE AIR BY VISITING YOUR NEAREST CARVER DEALER.

Ask to hear the most expensive tuner they sell. (It won't be the Carver TX-11a). Now tune a multi-path-ravaged, hiss-filled FM station. Tune the same station on the TX-11a Stereo AM-FM Tuner and press the Multipath and Noise Reduction buttons. You'll see why no other FM tuner can approach it. And why no other AM stereo tuner this good exists anywhere!



at line level, at least one and preferably two separate power amplifiers are required to drive the speakers used with it. Price: \$1,300. Kenwood Electronics, Dept. SR, 1315 E. Watsoncenter Rd., Carson, CA 90745.

## Lab Tests

We tested the FM tuner section of the Kenwood KRC-999 with its ABSS and ANRC systems disabled. Its 50-dB quieting sensitivity in both mono and stereo was very close to the respective usable-sensitivity measurements. The digital-synthesis tuner had a 23-kHz frequency error on the FM band, which was not sufficient to affect most of our other measurements but did slightly degrade the usable sensitivity (this improved by 1 or 2 dB when the signal generator was detuned for minimum distortion).

Like most car radios, the KRC-999's FM distortion was not particularly low, but its noise levels were comparable to those of typical home stereo receivers. The frequency response, after a smooth rise to +2 dB at 6,000 Hz, rolled off to about -4 dB at 15,000 Hz. Stereo separation exceeded 26 dB from 30 to 15,000 Hz and was a very good 40 dB at 1,000 Hz. The AM tuner section's frequency response was down 6 dB from its 1,000-Hz level at 45 and 3,250 Hz. Maximum output voltage into an EIA-standard load was 0.38 volt at the NORM(al) 300-mV setting of the output switch on the side of the control unit, and it was 1.2 volts with the HIGH setting of 1 volt.

**T**HE ABSS signal-search function went into action when the input level dropped to 24 dBf (4.35 microvolts across 75 ohms) for a few seconds, and the automatic frequency scan was announced by a short tone. The ANRC feature reduced FM audio level, noise, and channel separation as the received signal fell below 55 dBf (150  $\mu$ V); below 45 dBf (50  $\mu$ V) the output was essentially monophonic. The three signal-strength lights came on at inputs of 28, 42, and 54 dBf (about 7, 35, and 135  $\mu$ V, respectively).

The tape player's frequency response, measured with IEC-standard test cassettes, was almost the

## LABORATORY MEASUREMENTS

**FM mono usable sensitivity** (75-ohm input): 15.2 dBf (1.6  $\mu$ V)

**FM mono 50-dB quieting sensitivity** (75-ohm input): 16 dBf (1.75  $\mu$ V)

**Tuner signal-to-noise ratio** at 65 dBf: 75.3 dB

**Tuner distortion** at 65 dBf: 0.7%

**FM frequency response** (-3-dB limits): 30 to 12,500 Hz

**Stereo separation** (at 65 dBf) at 100, 1,000, and 10,000 Hz: 33.5, 40, and 30.5 dB

**Capture ratio** at 65 dBf: 2 dB

**AM rejection** at 65 dBf: 43 dB

**Selectivity:** alternate-channel, 57 dB; adjacent-channel, 2.5 dB

**Image rejection:** 65 dB

**AM frequency response:** 45 to 3,250 Hz +0, -6 dB

**Tape-playback frequency response** (IEC-standard BASF test tapes, -3-dB limits): 120- $\mu$ s EQ, 60 to 18,000 Hz forward or reverse;

70- $\mu$ s EQ, 50 to 18,000 Hz forward or reverse

**Tape signal-to-noise ratio** (referred to 250 nWb/m at 315 Hz, 120- $\mu$ s EQ, A-weighted): no noise reduction, 53 dB; Dolby B, 62 dB; Dolby C, 70 dB; dbx, 79.5 dB

**Flutter** (same in both directions):  $\pm 0.15\%$  CCIR-weighted peak; 0.08% JIS-weighted rms

**Tape speed accuracy:** +0.1% error at start, +0.05% at end of C-60 cassette

**Fast rewind time** (C-60): 187 seconds

**Equalizer adjustment range:** approximately  $\pm 12$  dB at center frequencies of 60, 120, 250, 500, 1,000, 3,500, and 10,000 Hz

**1,000-Hz clipping output** into EIA-standard load (10,000 ohms in parallel with 1,000 picofarads): 0.42 volt (NORM), 1.3 volts (HIGH)

same for both Type I and Type II tape (120- and 70-microsecond equalization, respectively). The differences between the forward and reverse responses were minor and did not appear to be caused by azimuth errors. The two curves diverged slightly above 1,000 Hz and maintained a nearly constant difference from 6,000 Hz to the 18,000-Hz upper limit of the test tapes. With Type I tape, the maximum difference between the two directions of play was about 3 dB, and with Type II it was under 2 dB.

The audio equalizer's response was essentially as claimed. The center-frequency calibrations were accurate, and the interaction between adjacent bands was about what one would expect from the 6-dB-per-octave slopes of the equalizer filters. The preset loudness-compensation curve boosted both low and high frequencies by about 6 or 7 dB at 100 and 6,000 Hz (relative to the 700-Hz level). The preset "vocal" curve was reasonably flat below 250 Hz and above 500 Hz, with a boost of about 6 dB between those frequencies.

The KRC-999 changes the volume level in steps when the UP or DOWN button is pressed. Over much of the control's range, the volume changed about 2 dB per step, but at some points the steps were less than 1 dB, and at others they were 3 to 4

dB. For the most part, however, the volume changes seemed smooth and imperceptible.

We connected the KRC-999's outputs to our home music system using a short wire antenna, and we tried as many of its features as were applicable to a home installation. In general its sound was indistinguishable from that of our regular tuner, and the results were equally good when we played prerecorded cassettes using either Dolby system as well as dbx. Several other car stereo units we have used in this manner have delivered satisfactory listening quality, but this is the first one we have tested that also surpasses the vast majority of home systems in operating versatility and control features.

As might be expected, it is not always easy to see and operate some of the controls—particularly those in the slide-out drawer. Most of the KRC-999's controls, in fact, cannot be operated by the driver of a car (at least not while driving!) and probably should be considered as setup adjustments rather than operating controls.

The Kenwood KRC-999 is a remarkable car stereo component that almost defies description in a limited space. Its instruction manual is extensive and in almost all respects it is complete, but it *must* be read if you expect to be able to use the sys-

tem. Although we found a number of the manufacturer's ratings to be overly optimistic, the KRC-999 measured up as one of the best car stereo units we have ever tested. Moreover, it is one of the few we have tested on the bench that later received extensive listening tests with home components, and it more than held its own in several A/B comparisons. With the right amplifiers and speakers, the KRC-999 should be close to the ultimate mobile audio component. *J.H.*

### Road Tests

We generally receive car stereo equipment in the same packaging a consumer gets it in, so we undergo the same orientation process a purchaser would. With the Kenwood KRC-999 this was especially time-consuming, because a thorough reading of the forty-page owner's manual is required to begin to grasp its numerous control functions. Kenwood also includes a well-done demo cassette that provides a logical and helpful fingertip walk-through of the controls.

Although the KRC-999's control panel and slide-out drawer are fairly cluttered, all the functions are clearly labeled, and only the necessary labels are illuminated at any given time. The clutter can be a little bothersome when driving, but most of the controls that require close inspection are infrequently set and can be adjusted before starting out on a drive. I ended up relying on my memory to find my way around the faceplate, satisfied that the main control buttons were similar enough to those on other models.

I was very impressed with the tape-handling functions of the KRC-999. Even under a barrage of adverse road conditions, or with a stupefying series of programming commands, the transport never failed to perform well. All three noise-reduction systems performed well too, and dbx and Dolby C provided the extraordinary quieting for which they are so justly treasured by home recording enthusiasts.

As I expected, the myriad tape programming functions worked well with standard popular material but were essentially useless with most of my classical music cassettes. The manual does warn that

tapes with prolonged quiet passages or very brief interband pauses will not work satisfactorily with the non-defeatable Automatic Blank Skip circuit, but I'm not sure I would want to resign myself to listening only to music whose characteristics are compatible with this circuit.

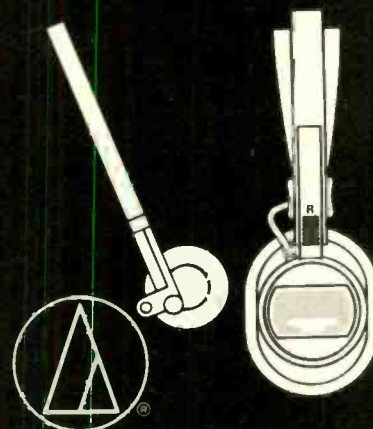
The unit's FM sound was transparent, full, and rich, and the dial was well-supplied with receivable stations. Although the ANRC system works fairly imperceptibly until signal strength drops into the noisier regions, I still missed a mono button. In listening to a program with a lot of talk, the effect of a mono button is almost always preferable to a shifting stereo signal, and it would be nice to have the choice. The numerous programmed-tuning possibilities, however, will be very welcome to most owners of the KRC-999. Kenwood seems to have anticipated the huge differences in consumer driving/listening habits very well.

Radio sound quality in the nastiest portions of my test route was always listenable, even in those impossible spots at the foot of the Brooklyn Bridge. Multipath manifested itself more as a modestly impolite noise than a complete interruption of the signal.

In the AM radio, the designers of the KRC-999 evidently gave more weight to quieting and midrange intelligibility than to the dubious advantages of a full-range frequency response. AM programs sounded clear and fairly quiet, though lacking in bass and treble. Voices were better defined than usual, and the dial was well filled with listenable stations.

Sonically, the Kenwood KRC-999 is a superb performer. At its price I would expect no less. Although I did not find the preset "loudness" and "vocal" response curves to my taste, most of the special features are nicely conceived and well executed. The main tradeoff in the design seems to be the tiny control buttons—you just can't have that many without making them very small—and it takes a while to learn to use them all. But the KRC-999's great flexibility and completeness of control should make the extended learning curve worth enduring for many music lovers. *C.G.*

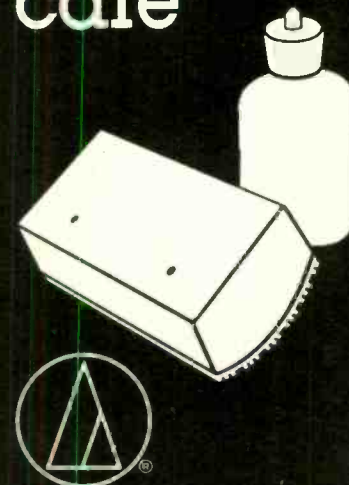
## The last word in stereo-phones



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## The last word in record care



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CIRCLE NO. 23 ON READER SERVICE CARD

by Julian Hirsch



## Watts and Waveforms

**T**WO questions posed to me recently in letters from different readers seemed at first to have little in common. As I read them over, however, a common factor emerged: each question involved the differences between sine-wave test signals and the complex waveforms of music or speech—and the apparent inconsistency between laboratory measurements and real-world music reproduction.

One writer questioned my use of single-cycle bursts for speaker testing, since I had stated that such a tone burst was “a simple signal unlikely to be found in real musical program material.” That statement is accurate, and the objection is even more applicable to the sine-wave signals almost universally used for audio testing. Any signal waveform can be expressed as the sum of one or more discrete frequency components having specific amplitude and phase relationships. A sine wave is the simplest waveform, the building block from which all our music is formed, and is thus ideal for many audio measure-

ments. Since a sine wave consists of a single frequency component, passing it through a device and analyzing the frequency spectrum of the output is a simple, direct method of measuring the component’s harmonic distortion (harmonic distortion being the creation of harmonics, or multiples, of the input frequency).

Consider the power represented by a sine-wave signal. It is equal to the square of the rms voltage (its “root-mean-square” value, or 0.707 times the peak value), divided by the resistance across which the voltage appears. This equation applies only for the duration of the signal; if the signal lasts much longer than one cycle (the reciprocal of the frequency), its power can be considered as a steady-state value for that time period.

In the case of speaker testing, suppose a voltage of 10 volts is applied to a 4-ohm speaker. This input represents a power of 25 watts, presumably not beyond the capabilities of many home speakers. But most of the power that we supply to our speakers—all but the 1 or 2 percent that is transformed into acoustic energy, or sound—is directly converted to heat. (Indeed, precise power measurements have traditionally been made by measuring the temperature rise of the load as a function of time.) The large voice coil of a woofer can absorb high-power inputs for long periods, although even a woofer can literally burn up in high-power operation, but a delicate tweeter coil can easily be burned out by the application of 5 or 10 watts for even a few seconds. This is not a problem in frequency-response testing, where a low power

can be used, but when we wish to establish how much power a speaker can handle without distortion (as distinguished from destruction), applying a steady high-level sine-wave signal would be a sure invitation to disaster.

Suppose that the speaker in question requires an input of 640 watts before its acoustic output distorts appreciably (analogous to clipping in an amplifier). If we use a pulsed signal equivalent to that power level, applied for 1 cycle and turned off for 128 cycles, and observe the acoustic waveform on an oscilloscope, the onset of clipping or other distortion can be viewed easily. But since the signal is on for only  $1/128$  of the total time, the average power applied to the speaker is a safe 5 watts.

The reason I have cautioned against assuming that a speaker that can absorb hundreds of watts in a pulsed-signal test can safely be driven to comparable levels with program material is that there is no assurance that the average power, over a period of seconds or longer, will not reach a dangerous level. The reader who wrote to me on this subject suggested testing a speaker by playing music through it and increasing the volume gradually until “undesirable effects on the speaker became apparent.” Very likely, the “undesirable effect” would be a sudden dulling of the high frequencies heralding the demise of a tweeter or two!

The “simple signal” I use is under my control, yet it simulates a real-world condition in which momentary signal peaks of hundreds of watts may occur unexpectedly along with a high *average* power level. My test is not (intentionally) destructive, but if this test signal were added to a real music background, it might well be.

The other reader whose letter I cited above complained about an apparently very different “real world” problem that is actually closely related to the one just discussed. He wondered what, if anything, can be done about the excessive loudness of the announcer’s voice between music selections on FM radio. I suspect that he and I listen to the same New York classical music station (WNCN), which ap-

### Tested This Month

*Harman Kardon TD392  
Cassette Deck*  
*American Acoustics D8500  
Speaker System*  
*Vector Research V-5000  
VHS Hi-Fi VCR*  
*Koss SST/7 Headphones*  
*Acoustat One + One  
Speaker System*



**Boston Acoustics component speaker systems.**



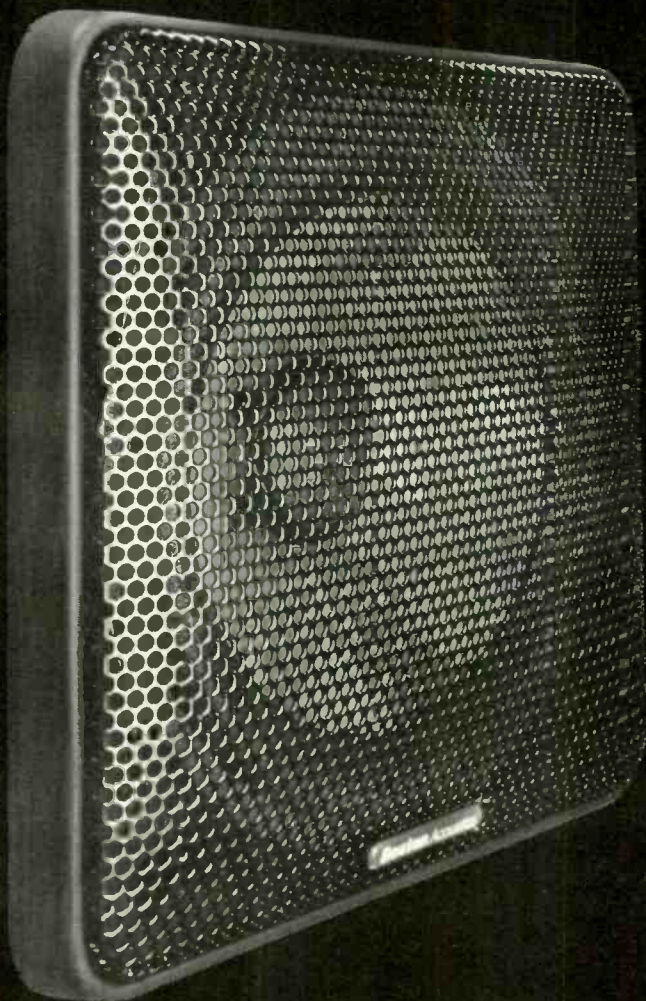
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The sonic performance of Magnaspheres is so close to real, so uncannily natural, they have already accomplished something no other product has ever done—they've won a record *three* "Decibel d'honneurs," France's most prestigious audio award. And the Magnaspheres' unprecedented ability to exploit the capabilities of compact discs is already the talk of the European audio community. Right now the Magnasphere Delta, Gamma and Beta are available through a small, carefully selected network of dealers in the United States. Visit one soon and hear the new standard in loudspeaker dispersion, imaging and three-dimensionality.

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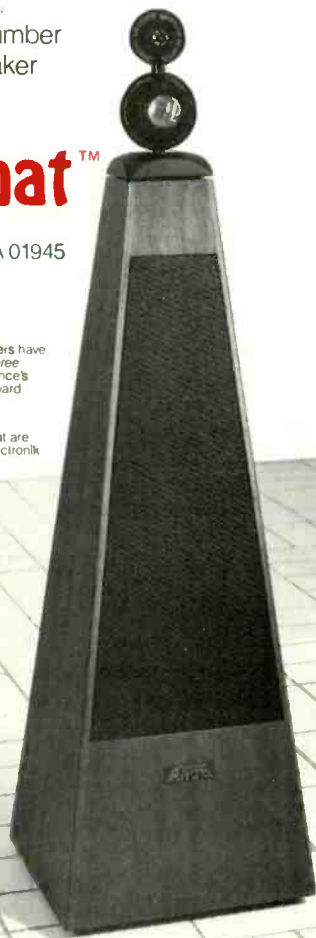
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## TECHNICAL TALK

plies no compression or limiting to its music programs and thus has to set the average modulation level quite low to keep the peaks within acceptable limits. The announcers' voices are (apparently) not so treated and often come through at ear-shattering levels if the music is played at a reasonable volume.

FM broadcasts, like the outputs of speakers and amplifiers, are often pushed to their limits by a program's dynamic range, a situation that is further complicated by the growing use of CD's. Traditionally, radio transmissions have been compressed to keep the average level high while avoiding overmodulation on peaks. "High average level" in FM broadcasting translates directly to "louder received signals," a matter that is of considerable importance to radio-station owners and advertisers.

Compression may not be objectionable to pop and rock listeners, but it is anathema to any serious classical-music lover. Compared with a compressed signal, however, one with unmodified dynamics is likely to sound much weaker, with background noise possibly masking the softer passages. If the playing volume is turned up, restoring some or all of the dynamic range, the hiss may be increased to an audible level. Many people still prefer to listen that way, possibly using a noise-reduction device to remove some of the hiss.

When the announcer's voice replaces the music, it is usually at a much higher *average* level, thanks to compression, although the peaks are probably no higher than those of the music program. Since it is the average level that determines subjective loudness, the announcer's voice sounds *loud!* The effect is analogous to the case I cited earlier, in which a loudspeaker that can handle very high peak levels might be disastrously overloaded by the simultaneous application of considerably lower average levels. As for what a listener can *do* about those loud announcers, I'm afraid I have no good answer. Besides lowering the volume, about the only suggestion I have is to write or phone the broadcast station to complain—not about the uncompressed music, just the too-loud announcers! □

Yamaha  
is introducing  
an audio/video  
control amp,  
a rear-channel  
stereo power amp,  
a video enhancer,  
a multi-mode  
surround sound  
amp,  
and an interactive  
audio/video system  
remote controller.

This is it.

It's called the AVC-50. You can use it to control just about everything in your audio/video system. It has a total of four video and six audio inputs. And the included remote can be used to control other Yamaha interactive audio components. So you can turn on your entire system, select audio and video source, control volume and playback of tuner, turntable, cassette deck, even a CD player.

The AVC-50 is also a full-featured integrated amplifier with 45 watts of power per channel.\* That's enough power to use it as the primary source of amplification in your A/V system. Or as a supplement to your present source of amplification, you can use it to drive a pair of rear channel speakers. Either way, the AVC-50 can decode the Dolby\*\* Surround signals. And when used with a rear speaker setup, you'll enjoy the full surround sound effect of movies that are encoded with this special sound-track feature.

But many stereo movies don't have surround sound. Which is why the AVC-50 has a special feature called the Yamaha Natural Surround mode. This unique circuit creates the same thrilling effect by feeding the appropriate background and ambient sounds through the rear speakers.

The AVC-50 can even simulate stereo and surround sound from a mono source. And since most network and cable TV programs as well as many movies on cassette are mono, you should get a lot of use out of this feature.

You should also appreciate the video enhancement features built into the AVC-50. Three front panel controls give you continuously variable control over picture detail, sharpness and video level. Meaning you can not only improve the quality of the video signal during the recording process, but you can also improve the picture quality during playback.

There is one thing the AVC-50 can't do, however, and that is usher you to your seat. But once you are seated, with one of these at your command, you may never have to get up again. Or want to.



\*45 watts RMS per channel, both channels driven into 8 ohms, from 20-20,000 Hz, at no more than 0.05% Total Harmonic Distortion.

\*\*Dolby is a trademark of Dolby Labs, Inc.

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

CIRCLE NO. 14 ON READER SERVICE CARD



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conductivity 24 karat gold plated circuit board—preserves every detail of the original musical event. The creation of each limited production Perreaux audio component is an art in itself. A tribute to the senses of sight and feel.



In a vote of audio critics and retailers, Perreaux was awarded the Hi Fi Grand Prix for "its Mercedes-like construction."

**Audio/Video Magazine, USA**

"The Perreaux has the talent for making music become a physical entity within the room."

**Hi Fi For Pleasure Magazine, England**

"... the synthesis of all you could demand, perfectly accomplished."

**Stereo Magazine, Germany**

"Peter Perreaux's masterpiece is as smooth and velvety in sound as its graceful front panel is in finish."

**Hi Fi & Elektronik Magazine, Denmark**

"Perreaux electronics have all the appearance and finish of the finest Swiss machinery."

**Revue du Son Magazine, France**

"... due to Perreaux's verifiable quality, it is likely to be the best value purchase in audio."

**Son Hi Fi Magazine, Canada**

# The best audio investment in the world... Perreaux amplifiers have a built in 80% trade-in value.\*

An interview with Anthony Federici,  
Director of Perreaux International

---

**Q. Why do Perreaux components have such a high trade-in value?**

The trade-in value of Perreaux components have always been far higher than average. This is probably due to several factors: Engineering that is at the leading edge of technology... hand crafted, limited production... simple, elegant, non-trendy styling...

and exceptional value when new. To further increase trade-in value, Perreaux is now giving a one-year limited parts and labor warranty on pre-owned Series 2 that is traded toward Series 3.

---

**Q. How long do you anticipate that Perreaux will retain this exceptional trade-in value?**

Probably indefinitely, because the resale value is intrinsic to the product. Given Perreaux's reliability and longevity, a 1-year warranty on pre-owned equipment is not an expensive commitment for the

factory. In other words, the trade-in "deal" simply reflects the real world value of Perreaux. I would expect both new and used Perreaux's to continue to retain the world's highest trade-in value.

---

**Q. Why do you believe people will pay as much or more for a used Perreaux as for a new product from another manufacturer?**

Because they are already doing so with Perreaux. A used Porsche or Mercedes costs more than many

new cars. However, because essentially there are no mechanical parts, it won't deteriorate like a car.

---

**Q. Will this lead the way for audio components other than Perreaux to increase their trade-in value?**

I hope so. Because it will allow more people to enjoy quality audio. As an example: The new Perreaux Series 1 system, consisting of a tuner, preamp and power amp, retails for about \$2000. I would expect it to retain about a \$1500 trade-in

value toward a new Perreaux. This means that the consumer will have been enjoying Perreaux quality and performance for about \$500. That's only the cost of a moderate receiver.

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\*At participating dealers up to 80% of original amplifier purchase price and 70% of original preamplifier purchase price will be offered for trade up of Series 2 toward Series 3.

# VANTAGE

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9 mg. "tar", 0.7 mg. nicotine av. per cigarette, FTC Report JAN. '85.

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PHOTOS BY DAN WAGNER

## HARMAN KARDON TD392 CASSETTE DECK

*Craig Stark, Hirsch-Houck Laboratories*

ONE of the oldest companies in audio, Harman Kardon has long stressed the importance of an extremely wide frequency range in its products. In keeping with that policy, the TD392 cassette deck is specified for a  $\pm 3$ -dB response all the way up to 22,000 Hz. The deck also uses special playback circuitry to minimize high-frequency phase shifts and incorporates the treble-extending Dolby HX Pro system. Separate record and playback heads, both Dolby B and Dolby C noise reduction, and a user-adjustable bias control are among the deck's other attractions.

The transport section of the TD392 is fairly conventional. The single capstan is belt-driven by a single motor, which also turns the reel hubs. Solenoids (rather than a motor/cam system) are used to operate the head gate and brakes, and even the three-digit tape counter is mechanical. In contrast to most contemporary decks, the TD392 requires manual switching to select bias and equalization for the three tape types. The cassette well is not

illuminated, though its clear door offers good label visibility and is easily removed for head cleaning and demagnetizing.

The TD392's sendust/ferrite record and playback heads are housed in a common casing but are electrically separate, which enables you to check the recorded quality of your tapes as you make them. Separate record and playback head elements are also all but mandatory if full response at the very highest audible frequencies is to be maintained.

The Dolby HX Pro system operates automatically while the deck is recording, instantaneously varying the record bias in response to the varying treble content of the music. When the music has little high-frequency content, full bias is used to minimize low-frequency distortion. When the music has a lot of high-frequency content, the bias is slightly lowered, permitting more treble energy to be stored on the tape. HX Pro is used only in recording, and the tapes made with the process can be played on any deck.

Signal levels are displayed on twelve-segment-per-channel, peak-

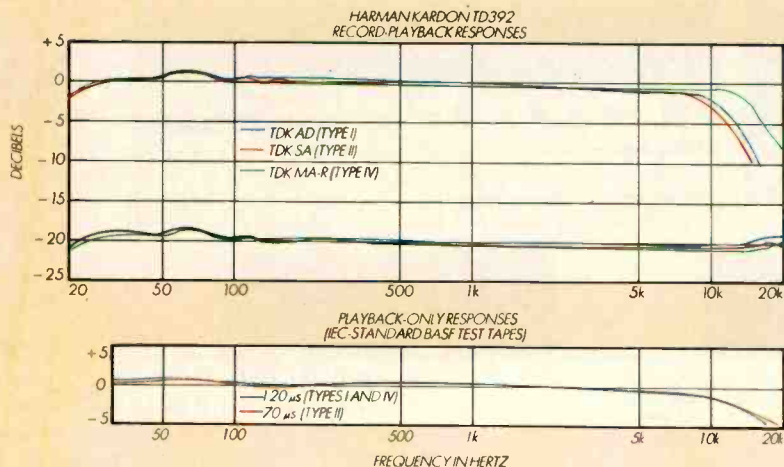
reading LED indicators. The display has a switch that selects either a normal (flat) measurement or one that is weighted to reflect the lower treble-saturation points of audio cassettes.

A small fold-down panel conceals the controls for playback output, input balance, and user bias adjustment. To optimize the bias for different brands of the same tape type, the user presses a button that causes the deck to record a low-frequency tone on one channel and a high-frequency tone on the other, then adjusts a bias control until the two tones show the same level reading. While this is not as refined a bias-adjustment technique as found in some higher-priced recorders, it is far superior to the usual practice of providing no tone generators at all, leaving the user to try to determine the correct amount of bias current by ear. The concealed panel also contains the switch for the FM-multiplex filter, which eliminates any residual subcarrier signals that might leak through from a tuner.

The simplicity of the deck's electronics precludes elaborate programming options; the only provision of this type is for indefinite repetition of a whole side of a cassette. No microphone jacks are provided, an omission that has almost become standard on today's home cassette decks. The Harman Kardon TD392 measures 17 $\frac{3}{8}$  inches wide, 4 $\frac{3}{4}$

## FEATURES

- Separate record and playback heads
- Dolby HX Pro treble extension
- Dolby B and Dolby C noise reduction
- User-adjustable bias optimization
- LED level indicators, calibrated
- from -20 to +8 dB, with twelve segments per channel and switchable weighting scale
- Solenoid-operated transport
- Output-level control
- Defeatable FM-multiplex filter
- Front-panel headphone jack



## LABORATORY MEASURES

**Fast-forward time (C-60):** 129 seconds  
**Rewind time (C-60):** 130 seconds  
**Speed error:** none measurable  
**Dolby tracking error:** Dolby B, +0, -1.5 dB; Dolby C, +0, -2.5 dB  
**Wow-and-flutter:** 0.044% wrms, 0.066% DIN peak-weighted  
**Line input for indicated 0 dB:** 64 mV  
**Line output at indicated 0 dB:** 0.58 volt  
**Meter indication at IEC-standard 0 dB:** 0 dB

**Tape: TDK AD (Type I, ferric)**  
**IEC 0-dB distortion:** 0.77%  
**Meter indication at 3% third-harmonic distortion:** +3.4 dB  
**Signal-to-noise ratios (in decibels):**

	Unwtd.	A-wtd.	CCIR
NR off	53.0	57.7	55.1
Dolby B	59.3	66.3	65.2
Dolby C	62.2	73.2	74.6

**Tape: TDK SA (Type II, CrO<sub>2</sub>-type)**  
**IEC 0-dB distortion:** 1.5%  
**Meter indication at 3% third-harmonic distortion:** +2.6 dB  
**Signal-to-noise ratios (in decibels):**

	Unwtd.	A-wtd.	CCIR
NR off	55.3	59.6	57.0
Dolby B	60.0	67.5	67.0
Dolby C	62.7	75.2	76.6

**Tape: TDK MA-R (Type IV, metal)**  
**IEC 0-dB distortion:** 0.77%  
**Meter indication at 3% third-harmonic distortion:** +6.8 dB  
**Signal-to-noise ratios (in decibels):**

	Unwtd.	A-wtd.	CCIR
NR off	59.0	62.9	60.0
Dolby B	64.3	71.3	70.0
Dolby C	66.6	78.8	79.4

inches high, and 12<sup>3</sup>/<sub>8</sub> inches deep. It weighs about 12<sup>3</sup>/<sub>4</sub> pounds. Price: \$550. Harman Kardon, Dept. SR, 240 Crossways Park West, Woodbury, NY 11797.

### Lab Tests

Measured with our IEC calibrated playback tapes, the playback frequency response of the TD392 was extremely flat: ±0.5 dB from 31.5

to approximately 4,000 Hz. Above 4,000 Hz there was a slight treble rolloff, reaching approximately -5 dB at 18,000 Hz. Since the record-playback results do not reflect the same pattern, the azimuth-alignment tape that Harman Kardon used to set up our test sample must differ slightly from our BASF-produced test tapes.

We tested the frequency response

of the TD392 using factory-selected, center-of-the-line samples of TDK AD (ferric), TDK SA (chrome-equivalent), and TDK MA-R (metal) cassettes. The effects of Harman Kardon's "ultrawideband, linear-phase" design principles were much in evidence here. While most decks in this price class permit the response to fall off sharply below 50 Hz and above 17,000 Hz at the -20-dB level, the TD392 measured within +2, -1 dB from 20 to 20,000 Hz with all three tapes. The effect of the HX Pro system in reducing tape saturation at the uppermost frequencies, though less dramatic, is also apparent from the 0-dB-level curves, which do not fall off until a point several kilohertz higher than one would expect.

*The signal-to-noise ratios were extremely high, comparable only with those of decks costing far more.*

The measured signal-to-noise ratios were extremely high, comparable only with those of decks costing far more or equipped with the dbx noise-reduction system. On the other hand, the deck's wow-and-flutter figures were only fair, reflecting the cost-cutting decision to use a single-motor, single-capstan drive. Dolby tracking error was low; sensitivity and output levels were normal.

### Comments

To the state-of-the-art oriented tester, the Harman Kardon TD392 had a slightly old-fashioned, though comfortable, feel to it, largely a result of its solenoid-activated rather than motor-controlled transport functions. The electronics were capable of making superb copies of both plaster-shattering and delicately nuanced music. In blind comparisons with our more expensive reference deck, the greater wow-and-flutter of the TD392 was evident, though I suspect that very few listeners would find it objectionable. For the serious home recordist, then, if not, perhaps, for the purist, the Harman Kardon TD392 represents solid value in its price class.

**Circle 140 on reader service card**



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Teac is not in the habit of building audio equipment for the undiscerning. Rather, we commit ourselves to those few individuals discontented with anything less than the finest recording and sound reproduction equipment money can buy.

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The Teac ZD-5000 compact disc player. "Fi" just doesn't get any higher.





## AMERICAN ACOUSTICS D8500 SPEAKER SYSTEM

*Julian Hirsch, Hirsch-Houck Laboratories*

**T**HE D8500 is a recent addition to the American Acoustics D-Series line of "digital ready" loudspeaker systems. Rated for above-average sensitivity and designed to handle the wide dynamic range of digital audio without distortion or damage, the D-Series speakers are also said to be suitable for video applications because of their low external magnetic field.

A three-way system in a fairly large floor-standing vented enclosure, the D8500 has a 15-inch polypropylene-cone woofer with a 2-inch voice coil wound in two layers on an aluminum bobbin. The middle frequencies are handled by a 5-inch polypropylene-cone driver that is damped with ferrofluid and isolated by a sealed back from pressure created behind the woofer. The high frequencies are radiated by a 1-inch soft-dome tweeter, also ferrofluid damped.

The crossover network from the woofer to the midrange driver uses

second-order (12-dB-per-octave) low-pass and high-pass filters, and the high end of the midrange driver's response is allowed to roll off naturally. Another second-order high-pass filter channels only the high frequencies to the tweeter.

The D8500 has no external level or balance controls. Recommended for use with amplifiers delivering up to 205 watts of output, the system has a rated sensitivity of 93 dB (sound-pressure level measured at 1 meter with 2.83 volts of pink noise from 20 to 20,000 Hz). Its frequency response is specified as 37 to 20,000 Hz. The manufacturer recommends placing the speakers at least 16 inches from rear walls and 12 inches from side walls. Angling the cabinets inward about 10 to 15 degrees is also said to improve imaging in the center of the soundstage.

The walnut-veneered cabinet of the D8500 is 30 inches high, 18½ inches wide, and 14½ inches deep. Its grille is easily removed, revealing the drivers and the woofer port

on the front board. Two spring-loaded clips for the stripped ends of the speaker wires are in the rear of the cabinet. Each unit weighs approximately 55 pounds. Price: \$978 per pair. American Acoustics, Dept. SR, One Mitek Plaza, Winslow, IL 61089.

### *Lab Tests*

The sensitivity of the American Acoustics D8500 was exactly as rated when measured with an octave band of pink-noise centered at 1,000 Hz. With both speakers placed approximately as recommended, but facing directly forward and 8 feet apart, the averaged room response was uniform within  $\pm 3$  dB from 100 to 20,000 Hz. The close-miked woofer response, when combined with its port radiation, reached its maximum at 70 Hz. The output was substantially lower in the 100- to 300-Hz range, and the close-miked midrange driver's output decreased rapidly below 400 Hz, but there was no evidence of a reduced overall system output in that region, either in the room response or in an FFT response measurement at 1 meter. Splicing the room curve to the woofer curve produced a composite response that varied  $\pm 3$  dB from 85 to 20,000 Hz, rose about 4 dB at 70 Hz, and dropped sharply below 50 Hz.

Our measurements indicated that the crossover frequencies of the

*The D8500's octave-to-octave frequency balance—one of the key factors affecting a speaker's sound quality—was exceptionally uniform and smooth, with a slight but definite brightness.*

drivers were approximately 400 and 4,000 Hz. The acoustic crossover between the port and the woofer cone was at 60 Hz. In an FFT measurement, the speaker's response 30 degrees off axis differed from its axial response by about 6 dB above 10,000 Hz and in the region of 3,000 to 4,000 Hz, apparently because of different polar responses from the midrange and high-frequency driv-

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In 1954, the Dodgers were in Brooklyn, Brando was on the waterfront, and Elvis was in Sun Studios. In September 1954, a classic two-seater called the Ford Thunderbird went into production.

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ers. The impedance of the D8500 was about 4.5 ohms from 20 to 30 Hz and reached its minimum of 4.2 ohms between 80 and 100 Hz and from 10,000 to 12,000 Hz. Its maximum was 16 ohms at 63 Hz. The markings on the speaker cabinet indicate a 4- to 8-ohm impedance rat-

*Because of their flat response in the lower midrange, the American Acoustics D8500's were relatively free of the artificial "chestiness" imparted to male voices by many speaker systems.*

ing, which seems justified by our measurements.

The woofer distortion was measured with a constant input of 2 volts, corresponding to a 90-dB sound-pressure level (SPL) at 1 meter in the midrange. Distortion was very low (0.4 percent or less) from 100 to 60 Hz and increased gradually to 2.5 percent at 40 Hz and 5 percent at 30 Hz. The system's phase response was quite linear over the range from 1,000 to 20,000 Hz, with a group-delay variation of about 0.3 millisecond. Peak-power tests with low-duty-cycle pulsed signals showed that the speaker could handle the maximum output of our amplifier, which clipped at 580 watts (into 4.3 ohms) at 100 Hz, 380 watts (into 9 ohms) at 1,000 Hz, and 650 watts (into 4.3 ohms) at 10,000 Hz. The acoustic SPL from the speaker during these measurements was also impressively high, about 120 dB.

### Comments

We encountered only one questionable property of the American Acoustics D8500 during our testing. Its cabinet tends to vibrate when the speakers are driven at moderately high levels in the range of 100 to 300 Hz or so. The vibration showed up in our close-miked woofer-response curves as a sharp resonant peak and dip at about 250 Hz, but it could not be seen in the room-response or FFT measurements. The relatively light weight of the speaker, in view of its size and driver complement,

probably has something to do with this effect. With most program material, however, there was no audible sign of such resonance at reasonable listening levels.

The D8500 sounded very much the way its response curves looked, which is actually quite rare among speakers we have tested. The system's octave-to-octave frequency balance—one of the key factors affecting a speaker's sound quality—was exceptionally uniform and smooth, with a slight but definite brightness. Because of their flat response in the lower midrange, the D8500's were relatively free of the artificial "chestiness" imparted to male voices by many speaker systems. And thanks to its moderate amplitude and relatively low frequency, the bass peak at 70 Hz did not introduce audible coloration.

On the other hand, the low-bass frequencies (under 40 or 50 Hz) were not reproduced with the effec-

tiveness one might expect of a large, floor-standing system such as the D8500. Much of the time, no weakness would be noticed because of the speaker's excellent overall frequency balance, especially if the program lacks a strong deep-bass content. But don't expect the D8500 to massage your skin or untie your shoelaces with its bass output.

The designers of the D8500 opted, probably wisely, for high sensitivity rather than extended bass response. Given the dynamic range of CD's, this is a strong point in its favor. Used with a moderate-power amplifier—30 watts per channel, say—the D8500 should be able to do justice to digitally recorded and reproduced program material that might require upwards of 100 or 150 watts with speakers of average sensitivity. But if you do have a few hundred watts on tap, the speakers can handle the power safely and easily.

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Attention, K-Mart shoppers! On sale in our record department, two terrific Bach cantatas! 'Ich steh mit einem Fuss im Grabe' and 'Bisher habt ihr nichts gebeten in meinem Namen'—just \$4.39 each, or both for \$7.49!"

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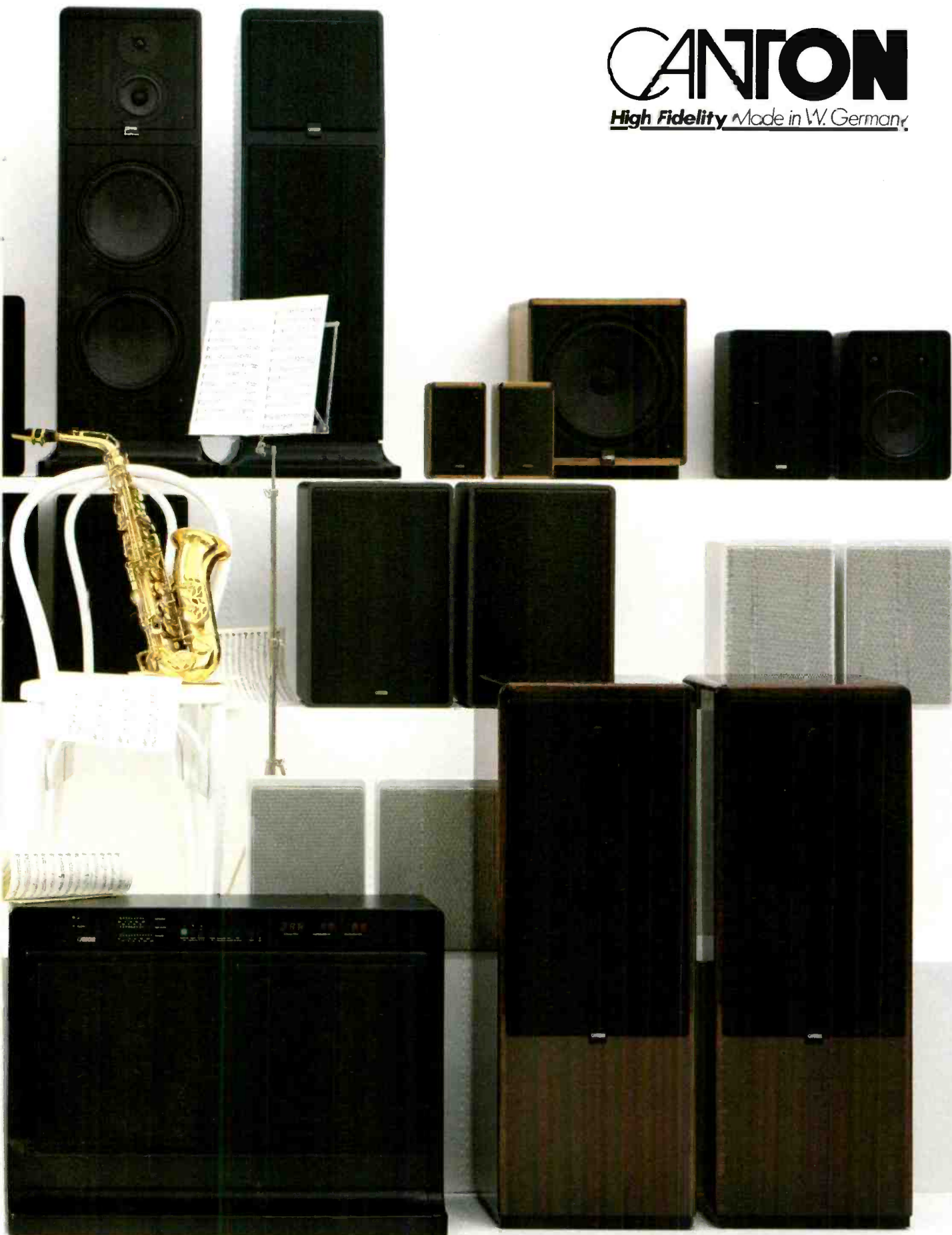
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**TDK** THE ART OF PERFORMANCE.



## VECTOR RESEARCH V-5000 VHS HI-FI VCR

*Julian Hirsch, Hirsch-Houck Laboratories*

**T**HE Vector Research V-5000 is a four-head dual-azimuth VHS Hi-Fi videocassette recorder that is equipped to receive and decode stereo MTS (multichannel television sound) and SAP (secondary audio program) transmissions as well as standard mono TV signals. It can record TV/FM simulcasts with full-fidelity audio, taking the video portion of the program from its own receiving circuits and the audio from the output of an FM stereo receiver.

Like all hi-fi VCR's, the V-5000 also records (and plays back) a longitudinal mono audio track for compatibility with conventional VHS machines. The mono program can be processed by a built-in Dolby B noise-reduction circuit during recording and playback. The V-5000 comes with a wireless remote control that can be used for some functions (such as volume) of a Vector Research VTM-25 video monitor. The video recording quality of the V-5000 is enhanced by its VHS HQ (High Quality) circuits, which provide sharper image edges and reduce video noise.

The V-5000 is controlled by a

number of soft-touch pushbuttons or keys on its front panel along with dual horizontal sliders to set recording levels for the hi-fi audio channels (the longitudinal track is recorded through an automatic level-control circuit). The keys control the usual VCR functions: recording, playback, fast forward and rewind, freeze-frame, and slow-motion playback at a fifth, a tenth, or a thirtieth of normal speed. In addition to the single-touch RECORDING key, there is a SEGMENT RECORDING key that sets the VCR to record in segments of 30 minutes for up to 5 hours total. The tuner of the V-5000 is factory-set for 140 channels—twelve VHF, seventy UHF, and fifty-eight cable. Unwanted channels can be deleted from its memory.

A yellow fluorescent display shows the day, time, channel, tape speed, program source, and various symbols that indicate the machine's operating status. The four-digit index counter can be switched to show the remaining time on a tape. Two horizontal, multiple-segment audio level indicators cover the range from -40 to +10 dB, with a peak-hold feature.

A novel feature of the V-5000 is

its ability to use its fluorescent display to monitor the playback tracking of tapes made on other machines. On most VCR's such monitoring must be done by eye—and ear, in the case of a VHS Hi-Fi recording—but the lighted bars of the V-5000 serve as a sensitive indicator to facilitate optimum tracking adjustment.

The remote control duplicates most of the recorder's front-panel controls, including those required to program it for unattended recording of up to eight events in a twenty-one-day period. The remote also has a CM SKIP button, not on the VCR itself, that simplifies skipping com-

*Novel features of the V-5000 include the ability to use its fluorescent display to monitor playback tracking of tapes made on other machines and a button on the remote control that simplifies skipping TV commercials.*

mercials during playback. Each touch of the button fast-forwards the tape for 30 seconds of playing time, after which it returns to normal play. Some of the recorder's controls (including a headphone volume control) are concealed behind a narrow hinged door that



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Lights Kings 10 mg "tar," 0.7 mg nicotine—  
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av. per cigarette, FTC Report Feb '85



Come to Marlboro Country.



Marlboro Lights, Longhorn 100's and famous  
Marlboro Red — you get a lot to like.

## FEATURES

- Receives and decodes stereo MTS and SAP transmissions
- Records and plays back at all three VHS speeds (SP, LP, EP)
- Records from TV broadcast, TV/FM simulcast, or any external high-level audio source
- Timer control permits unattended recording of up to eight events over twenty-one days
- Electronic four-digit index counter/clock/remaining-time indicator
- Twin-slider audio recording-level controls
- Automatic level control (ALC) for longitudinal (mono) soundtracks
- Switchable Dolby B noise reduction for longitudinal tracks
- Separate peak-reading fluorescent audio-level indicators for each channel, marked from -20 to +10 dB (red above 0 dB)
- Switchable level indicator shows tape tracking for easy adjustment
- Instant segment recording with separate internal timer
- Video HQ (High Quality) circuits for improved picture
- Program search finds preselected points on tape
- Commercial-skip function
- Digital quartz-controlled servo system to maintain tape synchronization
- Single-frame picture advance
- Slow-speed playback at one-fifth, one-tenth, or one-thirtieth normal speed
- Picture sharpness control
- Stereo headphone jack (1/4 inch) with volume control
- 140-channel tuner receives all VHF and UHF broadcast channels and 58 cable channels
- Switchable audio output for selection of stereo, left-channel, right-channel, mono, or SAP programs
- Wireless infrared remote control

## LABORATORY MEASUREMENTS

**Record-playback frequency response** (referred to 1,000-Hz level): hi-fi mode, 20 to 20,000 Hz +1, -2 dB; normal mode, 55 to 13,000 Hz +0, -5 dB at SP speed, 50 to 3,100 Hz at EP speed

**Harmonic distortion (THD + noise)** at 1,000 Hz: hi-fi mode, 0.12% at 0 dB, 0.14% at +10 dB; normal mode, 2.5% with 0.1-volt input level

**Signal-to-noise ratio:** hi-fi mode (A-weighted, referred to +15-dB signal level), 95 dB; normal mode (A-weighted, with Dolby B, referred to output from 0.1-volt input signal), 51.5 dB at SP speed, 50.5 dB at EP speed

**Record-playback flutter:** hi-fi mode, 0.005% JIS-weighted rms,  $\pm 0.009\%$  CCIR-weighted peak; normal mode, SP speed, 0.16% JIS-weighted rms,  $\pm 2.3\%$  CCIR-weighted peak; normal mode, EP speed, 0.22% JIS-weighted rms,  $\pm 3.5\%$  CCIR-weighted peak

**Input sensitivity for 0-dB recorded level:** 110 mV with maximum recording-level setting

**Input overload level:** 3 volts  
**Playback level at 1,000 Hz from 0-dB signal:** 0.43 volt

**Rewind time for T-120 cassette:** 207 seconds

**Stereo channel separation in hi-fi mode:** 58 dB at 1,000 Hz; 52 dB at 10,000 Hz

eral levels at frequencies of 20, 1,000, and 5,000 Hz (the last was chosen so that its harmonics would lie within the audio band).

The 20-Hz playback signal was visibly distorted on the oscilloscope, with a measured total harmonic distortion (THD) of 0.2 percent—second, third, and fourth harmonics were predominant. The 5,000-Hz distortion consisted of the same three major components but at a much lower level, 0.56 percent. To reach the 3-percent distortion used to establish the maximum level in analog tape recording, we had to record a 1,000-Hz signal at +15 to +16 dB, well off the scale of the fluorescent level display. The sig-

*The playback from recordings of LP's, CD's, and FM broadcasts was so close to the sound of the originals that only the most carefully controlled and critical listening could have distinguished between them.*

nal-to-noise ratio (S/N) relative to that level was about 90 dB unweighted and about 95 dB with A-weighting.

We measured the record-playback frequency response at levels of +10, 0, and -20 dB. It was nearly the same for the two lower levels, varying about  $\pm 2$  dB or slightly less from 20 to 20,000 Hz. Even at +10 dB the  $\pm 1.5$ -dB variation was maintained from 20 to 12,000 Hz, and response was down 3.5 dB at 20,000 Hz.

We also measured the performance of the longitudinal (standard) mono audio track of the V-5000. Since in this mode the recording level is set automatically by an internal ALC circuit, we arbitrarily set the input level at 1 volt initially and then repeated the tests at 0.1 volt. The 1,000-Hz playback output from a 1-volt input was 0.63 volt, with 5 percent harmonic distortion. Reducing the input to 0.1 volt resulted in a 0.45-volt playback level and 2.5 percent distortion.

The noise level in the playback of

spans almost the full width of the front panel.

The Vector Research V-5000, which is finished in black, measures 17 inches wide, 14 $\frac{3}{4}$  inches deep, and 4 inches high. It weighs just over 19 pounds. Price: \$995. Vector Research, Dept. SR, 20600 Nordhoff St., Chatsworth, CA 91311.

### Lab Tests

Many of the V-5000's features involve its video performance, of course, but our tests dealt only with its audio operation, specifically with the operation of the VHS Hi-Fi sys-

tem, as measured through the audio (line) inputs and outputs.

The input signal required for a 0-dB level-indicator reading, at a maximum recording-level setting, was 110 millivolts (mV). The input circuits could be overloaded by signal levels exceeding 3 volts. A 0-dB recording at 1,000 Hz played back at a level of 0.43 volt into a standard EIA load (10,000 ohms in parallel with 1,000 picofarads). The playback distortion was between 0.12 and 0.16 percent for recorded levels between 0 and +10 dB. We measured the playback distortion at sev-

# BEYOND CONVENTIONAL AUDIO

The DX-320 is divided into two sections, with coupling between the digital and analog stages of the player via Opto-Coupling Modules. In addition, power supply interference is prevented by using separate power supplies for the analog and digital sections, as well as for the transport mechanism.

Three high speed ONKYO Opto-Coupling Modules allow transfer of ultra high frequency digital audio data, word clock and bit clock signals which range in frequency from 176.4 kHz up to 4.32 megahertz. The module incorporates an optical fiber, between a precision LED light source and focusing lens, and a receiving photo-diode and lens assembly. Three additional opto-isolators are utilized for transfer of left/right clock, de-emphasis and muting signals. Together, these special components eliminate DSI.

## OPTO-COUPLING FOR ACCURATE DIGITAL REPRODUCTION

In addition to the digital audio data signals that must be converted into analog, CD players must also process non-audio digital data. During this conversion, Digital Signal Interference (DSI) occurs due to noise transfer between the various digital and analog stages, through printed circuit board wiring, and common ground lines. These non-audio data signals can actually interfere with the digital to analog conversion, resulting in Digital Signal Interference. This noise contributes to the harsh sound characteristics often attributed to digital reproduction.

In order to prevent DSI from appearing at the player's outputs along with the music signal, we found that it was necessary to completely isolate the digital and analog blocks of circuitry from each other electrically. This was made possible by the development of ONKYO's exclusive Opto-Coupling Module.

This new technology prevents DSI by utilizing specially designed high speed fiber optics that convert the digital data signals into beams of light. This eliminates the transfer of noise between the digital and analog stages. The result is honest, accurate musical reproduction with none of the harsh characteristics often attributed to conventional CD players.

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Artistry In Sound  
**ONKYO**  
200 Williams Drive, Ramsey, N.J. 07445

the longitudinal track with Dolby B was measured with A-weighting and unweighted at the fastest and the slowest tape speeds (SP and EP) and at the 1-volt and 0.1-volt input levels. There was little difference in noise level, which measured between  $-50.5$  and  $-53.5$  dB with A-weighting and between  $-45.5$  and  $-48.5$  dB without weighting. The record-playback flutter at the higher (SP) speed was  $\pm 2.3$  percent in a CCIR-weighted peak measurement and 0.16 percent with JIS rms weighting. As expected, flutter was somewhat higher at the lower (EP) speed, with readings of  $\pm 3.5$  and 0.22 percent.

Because of the effective action of the automatic level-control circuit, the record-playback frequency response was not affected by level. At the SP speed, the overall response variation was 5 dB from 55 to 13,000 Hz, and at the EP speed the range was 50 to 3,100 Hz.

Measuring the stereo MTS performance of a VCR requires a special modulator or signal generator designed to produce a test signal in the standard MTS format. As this type of professional test equipment is not yet available, we were able to evaluate the MTS performance of the V-5000 only by listening to the stereo broadcasts in our area.

## Comments

Comparing the hi-fi audio performance of the Vector Research V-5000 with that of the numerous VHS Hi-Fi VCR's we have previously tested, it is clear that it ranks close to the top of the group in most respects. The playback from recordings of LP's, CD's, and FM broadcasts was so close to the sound of the originals that only the most carefully controlled and critical listening could have distinguished between them. Recording levels are not critical; as long as the indicators remain on the scale, there is little chance of overloading the recording circuits. As with other hi-fi VCR's, noise and flutter are negligible.

One useful feature of the V-5000 (especially if it is installed at or near eye level) is its transparent cassette-well door. The cassette is illuminated and can be identified by reading its clearly visible edge label. The supply hub is also visible, showing

how much tape remains to be played or recorded. Another thing we appreciate about this VCR is the ability of the clock and programming circuits to retain their memories for as much as seven days without power—it won't have to be reprogrammed if it is accidentally unplugged or in the event of a power failure.

In our area, only the local NBC outlet transmits an appreciable amount of MTS stereo TV programming (as well as an SAP sub-channel carrying the programs of an NBC FM station). We watched and listened to a number of programs (and their commercials) that had stereo sound, and we soon realized that regardless of the relevance of stereo sound to their content, the overall sound quality of these transmissions was distinctly superior to most other TV broadcasts. Aside from this, stereo sound (even with daytime soap operas) often lent the programs a sense of immediacy that was lacking from a mono soundtrack. It was surprising to find that many of the commercials accom-

panying these programs were also in stereo, although we heard little evidence of the left-right manipulation we expected to find in transmissions designed to attract a viewer's attention.

Overall, we found the Vector Research V-5000 to be a remarkably versatile VCR, able to do just about anything that other machines can do as well as a number of things unique to itself. Paradoxically, its versatility may also be its major weakness. There is little likelihood that anyone—especially a layman—could use this machine to full effectiveness without extensive study of the manual and a lot of hands-on practice. Although the manual appears to be reasonably complete, it is not easy reading and sometimes fails to explain in sufficient detail the effects and limitations of some of the controls and features. If you are willing to spend a little time learning how to use it, however, the V-5000 looks like a superb addition to any high-quality home entertainment system.

*Circle 142 on reader service card*



*"Sir, today begins the second year—approximately 365 days, minus Sundays and holidays and the two weeks you were out recovering from an appendectomy—that you've been coming in here, unable to decide on which speaker to buy. I'm going to have to ask you to make a decision, one way or another, before 6 o'clock closing time today, or you will not be permitted to come into this store again."*



# BEYOND CONVENTIONAL AUDIO



## THE ONKYO INTEGRA DX-320 WITH OPTO-COUPLING THE SOUND IS NO ILLUSION

The Integra DX-320 Compact Disc player is the first of ONKYO's new generation of CD players to incorporate our unique Opto-Coupling digital signal processing system. Conventional CD players transmit digital data internally via printed circuit board wiring, which interacts with analog audio signals to produce Digital Signal Interference (DSI), resulting in an audible "harshness" in the music.

Specially designed high speed Opto-Coupling modules in the DX-320 transfer the digital audio and other data signals to the analog output stage via fiber optics, preventing DSI. The result is noise-free, line-level reproduction with none of the harsh sound characteristics often attributed to other CD players. This remarkable new technology can only be found in the ONKYO DX-320.

Double oversampling and digital filtering greatly improve phase and harmonic accuracy. A fully programmable wireless remote control includes memory selection, phrase capability, and indexing for maximum convenience.

Our unique transport design incorporates ONKYO's exclusive Poly-Sora, a rubber-like compound that improves isolation by absorbing extraneous vibrations, eliminating skipping and mistacking.

The Integra DX-320 Compact Disc player fulfills the promise of digital audio, with sound quality that's as close to the original as anything you've ever heard. Auction the DX-320 at your authorized ONKYO dealer today.

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*Artistry In Sound*

# ONKYO

220 Williams Drive, Ramsey, N.J. 07446

The Pioneer® SD-P40 is not a projection television. It is a projection *monitor*. The first of its kind.

And in one masterstroke, all—not some, but *all*—of the compromises associated with projection television have been eliminated.

In fact, the SD-P40 is not merely far

For the first time, a true skin tone is achieved in the presence of a vivid green. At last, color compromise is eliminated.

The exceptional performance of the Pioneer SD-P40 is the result of several major technological advances developed by Pioneer engineers over the last 3 years.

# PIONEER INTRODUCES THE WORLD'S FIRST PROJECTION MONITOR.

superior to *any* other conventional projection system, it is also superior to all but a few direct-view monitors.

## 450 LINES. AND THAT'S THE BEGINNING.

The horizontal resolution on the SD-P40 is more than 450 lines.

The brightness is more than 300 footlamberts. It is actually brighter than any direct-view system.

The contrast has a dynamic range more than twice that of conventional projection systems.

## THE END OF BIG-SCREEN COMPROMISE.

Ambient light, one of the great problems in projection video, is no problem at all. In fact, there is less deterioration in contrast due to ambient light than in direct-view systems.

Focus, so much a problem in conventional projection systems, is sharp to the edges of the screen. Further, the picture is equally bright regardless of what angle you are viewing it from.

Blacks, so often grey on conventional systems, are rich while holding detail.

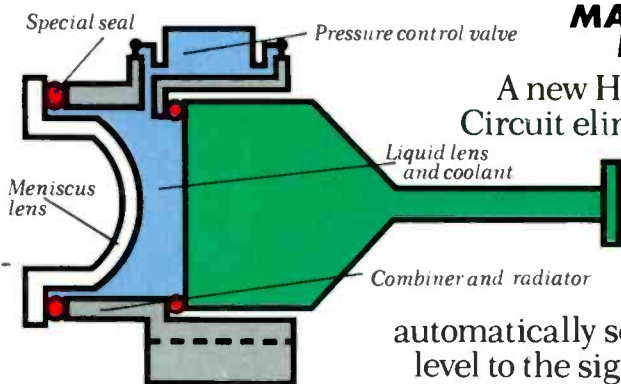
The fuzziness you're so used to seeing around white lettering and objects at high brightness, known as "blooming," is eliminated.

Color values are exceptionally accurate.

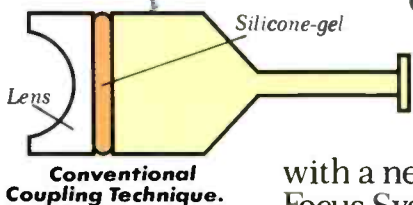
## AN UNPARALLELED LENS. A REVOLUTIONARY LENS SYSTEM.

The lens itself is the largest projection lens ever developed for private use—with a maximum bore of 160 mm.

Perhaps even more significant is Pioneer's development of the world's first liquid-cooled optical-coupling system. Far superior to conventional silicone gel or air coupling systems, the "Liquid Lens" is clearly the most accurate, efficient projection lens system ever devised.



The "Liquid Lens" Technique.



Conventional Coupling Technique.

## MAJOR ADVANCES IN CIRCUITRY.

A new High-Voltage Stabilizing Circuit eliminates anode voltage drop, preventing darkness in white areas and focus loss.

A new Black-Level Stabilizer Circuit automatically sets the optimum black level to the signal source.

A newly created Dynamic Focus Circuit guarantees sharp focus to the edges of the screen.

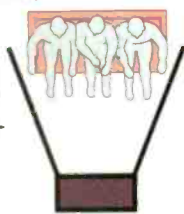
And new High-Focus CRTs utilize not one but three electron lenses. These, combined with a newly developed Linear Tracking Focus System, result in a focal performance superior to conventional CRTs.

## THE HEART OF A SOPHISTICATED AUDIO/VIDEO SYSTEM.

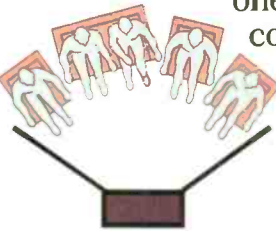
Inputs are provided for a LaserVision player

and two videocassette recorders, in addition to 139 cable-capable channels with 10-key direct access. There's an MTS decoder for stereo/SAP broadcasts, and a simulated-stereo processor. There's a built-in high-powered 12W + 12W amplifier, with two built-in 6 $\frac{5}{16}$ -inch speakers. There's a monitor output, and a TV output. There's even a variable audio output that lets you control volume through your hi-fi system by remote control.

In fact, the entire system is controlled by



**Conventional seating**



**Our seating**

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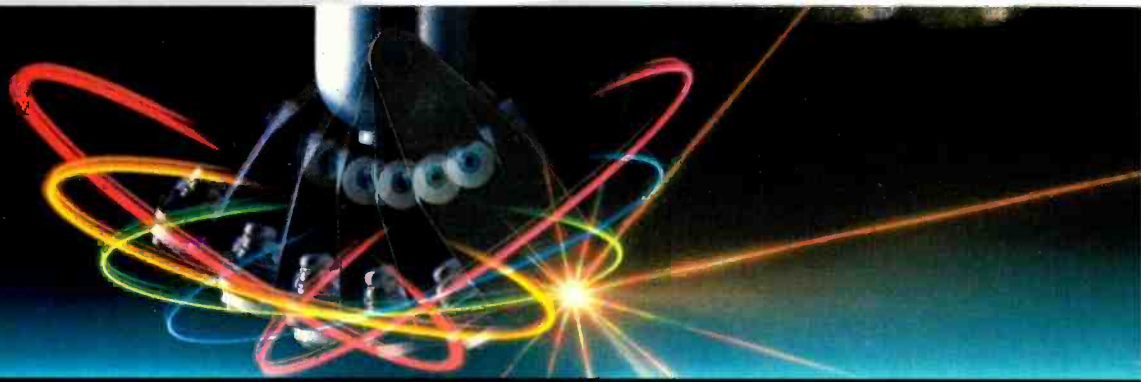
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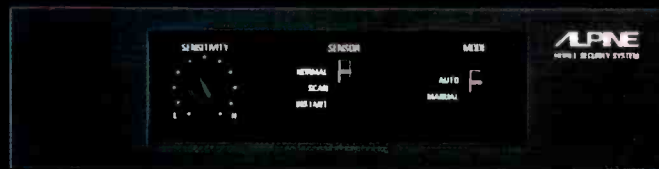
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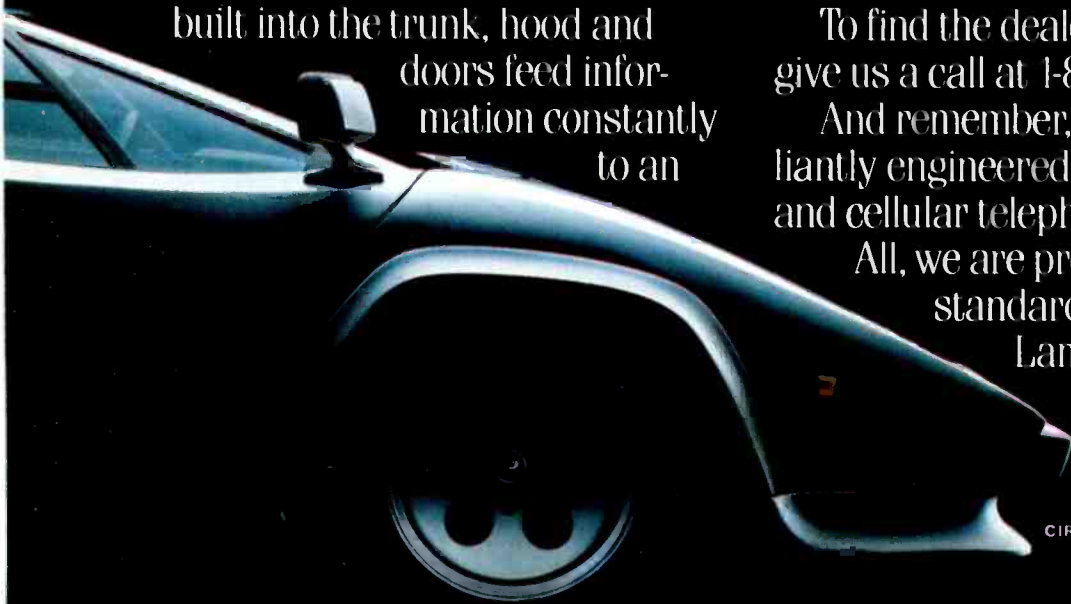
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## KOSS SST/7 HEADPHONES

*Julian Hirsch, Hirsch-Houck Laboratories*

**T**HE Model SST/7 heads a new line of "Super Sonic Technology" headphones from Koss. The SST/7 is a lightweight (5-ounce) circumaural headset whose soft-foam ear cushions surround the wearer's ears to exclude external sounds. According to the manufacturer, the SST/7 uses a very thin diaphragm in combination with a powerful rare-earth (presumably samarium-cobalt) magnet. The earpieces are connected by a single piece of metal spring material, but a separate, adjustable, soft-leather inner band is the only part that touches the wearer's head.

The earpieces are mounted with what Koss calls a multi-pivoted system. The bright chrome-finished plastic mounts are pivoted to allow a limited degree of vertical and horizontal adjustment, and the earpiece itself is joined to the mount by a second vertical pivot. A single thin rubber-covered cable emerging from the left earpiece carries the signals to both ears. Roughly 20 inches from the earpiece, the cable enters a small plastic box that has two slider controls for adjusting the volume for each earpiece individually. A coiled cord, which extends to 20 feet, emerges from the control box and terminates in a molded plug.

The specifications for the Koss SST/7 claim a frequency range of 15 to 30,000 Hz. Its sensitivity is given as 100 dB sound-pressure level (SPL) with an input of 0.34 volt rms and its impedance as 60 ohms. The distortion (at an unspecified fre-

quency) is given as less than 0.2 percent at 100 dB SPL. Price: \$69.95. Koss Corporation, Dept. SR, 4129 N. Port Washington Ave., Milwaukee, WI 53212.

### Lab Tests

Measured on a standard headphone coupler, the sensitivity of the Koss SST/7 at 1,000 Hz was exactly as rated. The frequency response was exceptionally flat and smooth through the midrange and upper bass, varying only  $\pm 1.5$  dB from 55 to 1,600 Hz. Between 75 and 860 Hz, the overall output variation was also only  $\pm 1.5$  dB. The low-frequency output fell off at 12 dB per octave, and at 30 Hz it was 10 dB below the average midrange level.

At higher frequencies, the SST/7's response curve had the kind of fluctuations, caused by internal standing waves within the air space enclosed by the earpiece and microphone diaphragm, that are typical of headphone coupler measurements. There were sharp dips at about 4,500 and 9,000 Hz (the harmonic relationship of these frequencies is a confirmation that the dips originate in internal volume resonances), a peak at 7,500 Hz, and an overall response extending beyond 15,000 Hz. Ignoring the coupler-related anomalies, the averaged frequency response of the SST/7 was  $\pm 8$  dB from 40 to 18,000 Hz.

The impedance of the phones was the rated 60 ohms over most of the audio frequency range, with a maximum of 75 ohms in the 60- to 80-

Hz range. We measured the harmonic distortion at 100 and 1,000 Hz with drive levels from 0.34 to 1.9 volts (corresponding to acoustic outputs of 100 to 115 dB at 1,000 Hz). The 1,000-Hz distortion was 0.32 percent at 100 dB, 0.42 percent at 110 dB, and 2.55 percent at 115 dB. At 100 Hz the distortion was higher, about 1.5 percent up to 110 dB and 2.75 percent at 115 dB. The greater distortion at this low frequency is a result of the larger diaphragm movement at a given input level, an effect directly analogous to the typical increase in speaker distortion at low frequencies.

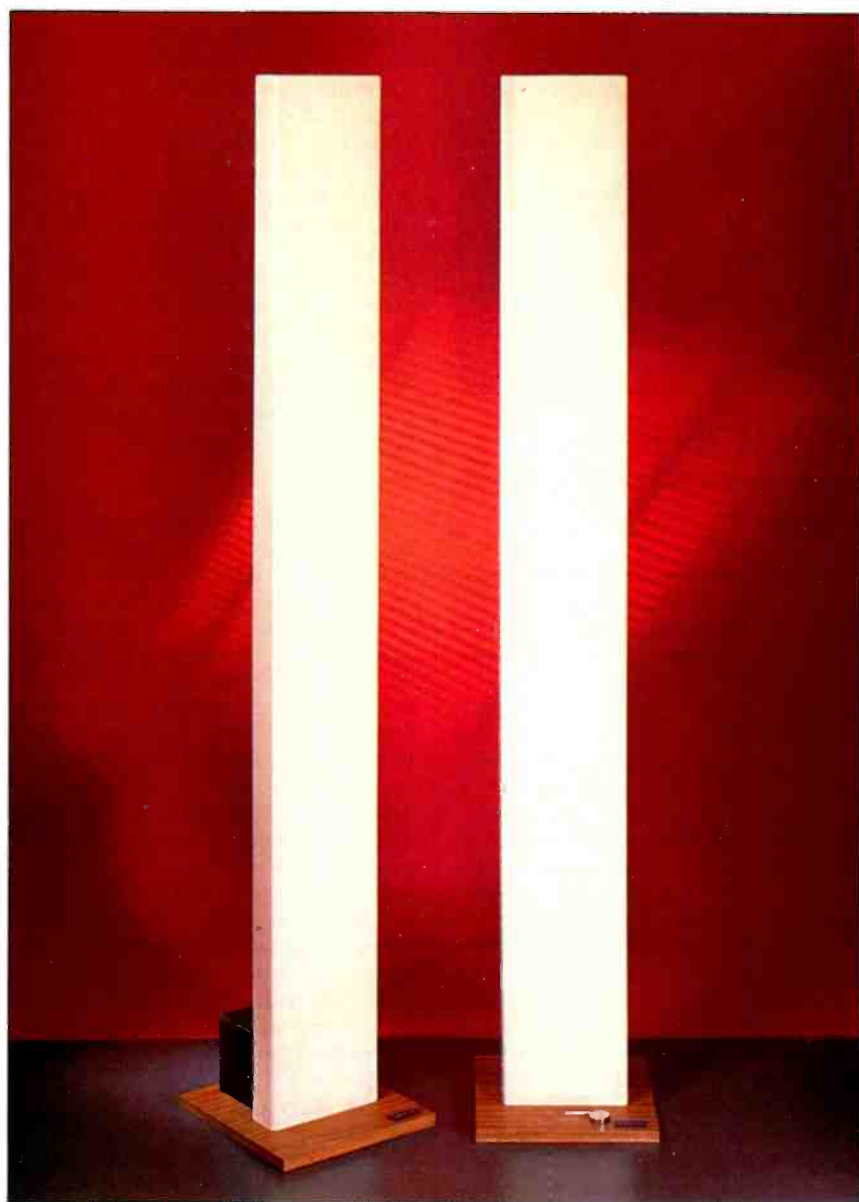
### Comments

Although the overall sound of the Koss SST/7 was by no means dull, it lacked some of the brilliance of other headphones we have tested. On the other hand, the bass response of these phones was outstanding, both deep and powerful. To some extent, the strength of the bass may have contributed to the perception that the high frequencies were subdued. In listening to certain CD's, we felt that the sound of the SST/7 was not as sharply defined as that of other, considerably more expensive headphones we compared them with, but there was never any doubt as to the SST/7's superior bass response. We would expect a user with a taste for rock music to find the Koss SST/7 preferable to phones whose response characteristics favor the middle and upper frequencies.

Our chief criticism of the Koss SST/7 is not related to sound but to wearing comfort. We do not think that the multi-pivoted earpiece design allows sufficient vertical movement for the ear cushions to fit flat against the ears for *all* head shapes. Like any item of wearing apparel, headphones should be tried on for wearing comfort before purchase.

The Koss SST/7's are sensitive phones whose low impedance permits them to deliver more power from low-voltage output sources such as portable cassette radios and portable CD players. Driving the phones from a preamplifier headphone output, we were able to achieve extremely high sound levels, well beyond what is possible with higher-impedance phones.

**Circle 143 on reader service card**



## ACOUSTAT ONE + ONE SPEAKER SYSTEM

*Julian Hirsch, Hirsch-Houck Laboratories*

**I**N many respects, a full-range electrostatic speaker seems to be the ideal solution to many of the problems of conventional dynamic loudspeakers. An electrostatic speaker's extremely thin, lightweight plastic diaphragm, driven uniformly over its entire surface by an electrostatic force, is inherently free of crossover problems and

most internal mechanical resonances. Its large radiating surface enables it to produce substantial low-frequency power with a small diaphragm displacement and low distortion. Unfortunately, electrostatic speakers are usually expensive, large, and low in efficiency, and many of them have had reliability problems.

The Acoustat One + One is one of the few relatively inexpensive full-range electrostatic speaker systems currently available to the American audiophile. Its plastic diaphragm, only 0.65 mil thick, is damped by a number of specially shaped ¼-inch-thick felt blocks attached to the rear of the speaker panels and has a natural resonant frequency of 32 Hz. Like all other full-range electrostatic speakers, the Acoustat is a dipole radiator, delivering the same acoustic output to the front and rear, with nulls at its sides. The manufacturer recommends placing the speakers at least 3 feet from the rear wall and 2 feet from a side wall for optimum performance.

Although the speaker itself is a full-range radiator, the One + One system's interface unit contains separate matching transformers for low and high frequencies, each with its own crossover network. The two transformers allow the amplifier to "see" a reasonably constant 4-ohm impedance over the full audio range even though the impedance of the electrostatic elements themselves is almost purely capacitive and varies widely with frequency. The transformers effectively cross over at 1,500 Hz, with a broad overlap covering more than one-third of the audio spectrum.

The rated frequency response of the Acoustat One + One is 30 to 20,000 Hz  $\pm$  2 dB. Its minimum power requirement is 70 watts per channel into 4 ohms, and it can be driven safely by amplifiers rated at 200 watts or more. Acoustat claims that in a 14 x 22-foot room a pair of One + One speakers can produce a peak sound-pressure level (SPL) of 110 dB at 18 feet.

The One + One is a freestanding column that measures 11 inches wide, 93 inches high, and 3½ inches deep. It is covered completely with a beige grille cloth and sits on a 16 x 17-inch teak and Formica-finished base that also holds the interface unit. Each complete speaker weighs 72 pounds. The interfaces contain the required high-voltage power supplies, which should be left constantly energized (each speaker consumes about 5 watts from the 120-volt power line).

The Acoustat One + One system



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*The Acoustat One + One is one of the few relatively inexpensive full-range electrostatic speaker systems now available in the U.S.*

rosewood veneers or in gloss black. Acoustat, Dept. SR, 3101 Southwest First Terr., Ft. Lauderdale, FL 33315.

## Lab Tests

Acoustic measurements of a large panel speaker such as the Acoustat One + One are not easily compared with those made on most dynamic speakers. According to its manufacturer, the One + One behaves like a combination of a line source and a planar radiator; consequently, there should be a considerable difference between close-miked measurements and those taken at a distance of several meters. Although we recognize this distinction, the size of the speakers prevented us from measuring them under ideal conditions. They are so large that we had little room to maneuver in our 15 x 20-foot listening room.

Almost as soon as we started to listen to the Acoustat One + One, it became apparent that it is not a high-efficiency speaker. Even using several amplifiers in the 200- to 400-watt-per-channel range, we could not produce a listening volume that precluded comfortable conversation. Measurements made at a 1-meter distance revealed a sound-pressure level of 74 dB with a 2.83-volt input signal—about 15 dB less than with typical small dynamic speakers and 10 dB less than with low-efficiency dynamic speakers.

Our standard 90-dB reference level for bass-distortion measurements required an input of 17.9 volts, corresponding to a power level of 15 to 50 watts into a speaker impedance of 6 to 20 ohms in the low-bass range, or 80 watts into the speaker's nominal 4-ohm impedance. The measured impedance was surprisingly uniform, 3.5 to 3.8 ohms,

from 200 to 10,000 Hz. It rose at lower frequencies, to a maximum of 45 ohms at 25 Hz, and dropped at higher frequencies, reaching a minimum of approximately 1.9 ohms at 20,000 Hz.

Our room-response measurements, at about 3 meters distance, showed the usual peaks and dips in the 50- to 500-Hz range, the result of reflected signals from the front and rear radiation of the speaker panels. Above 500 Hz, the left speaker delivered an impressively flat output on axis, varying only  $\pm 3$  dB from 500 to 15,000 Hz. The output dropped sharply at higher frequencies, falling to  $-12$  dB at 20,000 Hz. The output of the right speaker, however, measured 30 degrees off axis, sloped down steadily above 1,500 Hz and was at least 10 dB below the axial response over most of the high-frequency range.

The only way we could measure the speaker's low-frequency response was with close miking. The output was at its maximum in the 40- to 70-Hz range, falling off at about 24 dB per octave below 40 Hz. Above 70 Hz the response sloped downward at about 12 to 15 dB per octave. Above 500 Hz the microphone was responding to signals emanating from different portions of the diaphragm, and the resulting cancellations produced an irregular curve. The bass curve and the room curve spliced reasonably well, however, and the resulting composite curve was a fair approximation of what we heard from the system. Essentially, the speaker's output decreased as frequency increased over the full audio range from about 50 to 20,000 Hz. The total change in level was about 12 dB, equivalent to a slope of perhaps 1.5 dB per octave.

The distortion of the speaker's acoustic output was about 2 to 3 percent from 100 to 50 Hz, rising to 8 to 9 percent at 30 to 40 Hz. Keep in mind, however, that these close-miked measurements cannot be compared directly with similar measurements made on dynamic speakers with smaller radiating surfaces.

Our quasi-anechoic FFT response measurements, made at distances of 1 and 3 meters, were less affected by room interaction than our room-

response measurements. Since they were mostly made on the speaker's axis, the resulting frequency-response curves looked flatter than our sloping room curves (which to some extent reflect the total power output of the speaker as well as its axial response). In fact, the measured axial response at 1 meter, 180 to 20,000 Hz  $\pm 3.5$  dB, would do credit to any speaker. The group delay varied  $\pm 0.4$  millisecond from about 500 to 20,000 Hz. Our room data were also confirmed by FFT horizontal directivity measurements on axis and at 30 degrees off the speaker's axis. The One + One is extremely directional above 2,000 Hz or so, with a 10- to 20-dB difference between the two axes of measurement.

In our peak-power-handling tests, at 1,000 Hz the amplifier's protection relay tripped at an output of 50 volts into the speaker's 3.4-ohm impedance (equivalent to 735 watts input). At 10,000 Hz the amplifier's output became visibly distorted at 35 volts (383 watts into 3.2 ohms). Only at 100 Hz did the speaker distort before the amplifier gave up, at 17 volts into 6 ohms (48 watts). These data indicate that the One +

*The speakers sounded just fine—slightly warm, with a very healthy bass and the smooth, spacious quality characteristic of good dipole radiators. The entire back wall came alive with sound.*

One can be driven into nonlinearity at low frequencies with a relatively low-power source and that over much of the audio range it will present a rather difficult load to some amplifiers.

## Comments

We found the Acoustat One + One prodigiously hard to drive. As we said earlier, 200- to 400-watt amplifiers could produce no more than a comfortably loud level from them, a volume that did not prevent ordinary conversation in the room. Some powerful amplifiers have a limited current-delivering capacity



at the highest frequencies, and their protection circuits will be triggered by the low (and possibly reactive) impedance of the Acoustat speakers in the highest audible octave. With a 65-watt receiver, we were limited to background-music levels. On the other hand, our measurements cannot be translated directly to the room environment in which Acoustat says the speakers will generate a 110-dB SPL.

Despite our less-than-ideal listening room, however, the speakers sounded just fine! They were slightly warm, with a very healthy bass and the smooth, spacious quality characteristic of good dipole radiators. The rear radiation caused the entire back wall to come alive with sound. The directivity of the front radiation was never perceptible in normal use, possibly because the rear radiation was filling in the reduced portions of the frequency range. Compared with several dynamic speakers we had on hand, the Acoustat One + One sometimes seemed to have even *more* high-end output, although our measurements contradicted this impression. In our overall listening, however, we found the sound neither bright nor dull—perhaps only a bit soft. This reaction undoubtedly reflects our personal listening taste. If you prefer crisp, sizzling highs, you might find these speakers a little too subdued.

The Acoustat One + One speakers surprised us by being virtually invisible, not only acoustically (a common characteristic of dipole or omnidirectional radiators), but *visually* as well. How could a pair of 8-foot columns go unnoticed in a 15 x 20-foot room? Our best guess is that they looked somewhat like decorative structural columns and were therefore accepted as part of the surroundings by several people who were exposed to them without knowing it.

The Acoustat One + One is a very listenable and attractive speaker at a reasonable price. If your ceiling height and bank account will accommodate a pair of these speakers, and if you have a really husky power amplifier and do not expect to listen at live levels, try to audition them. They are well worth hearing.

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by Steve Birchall

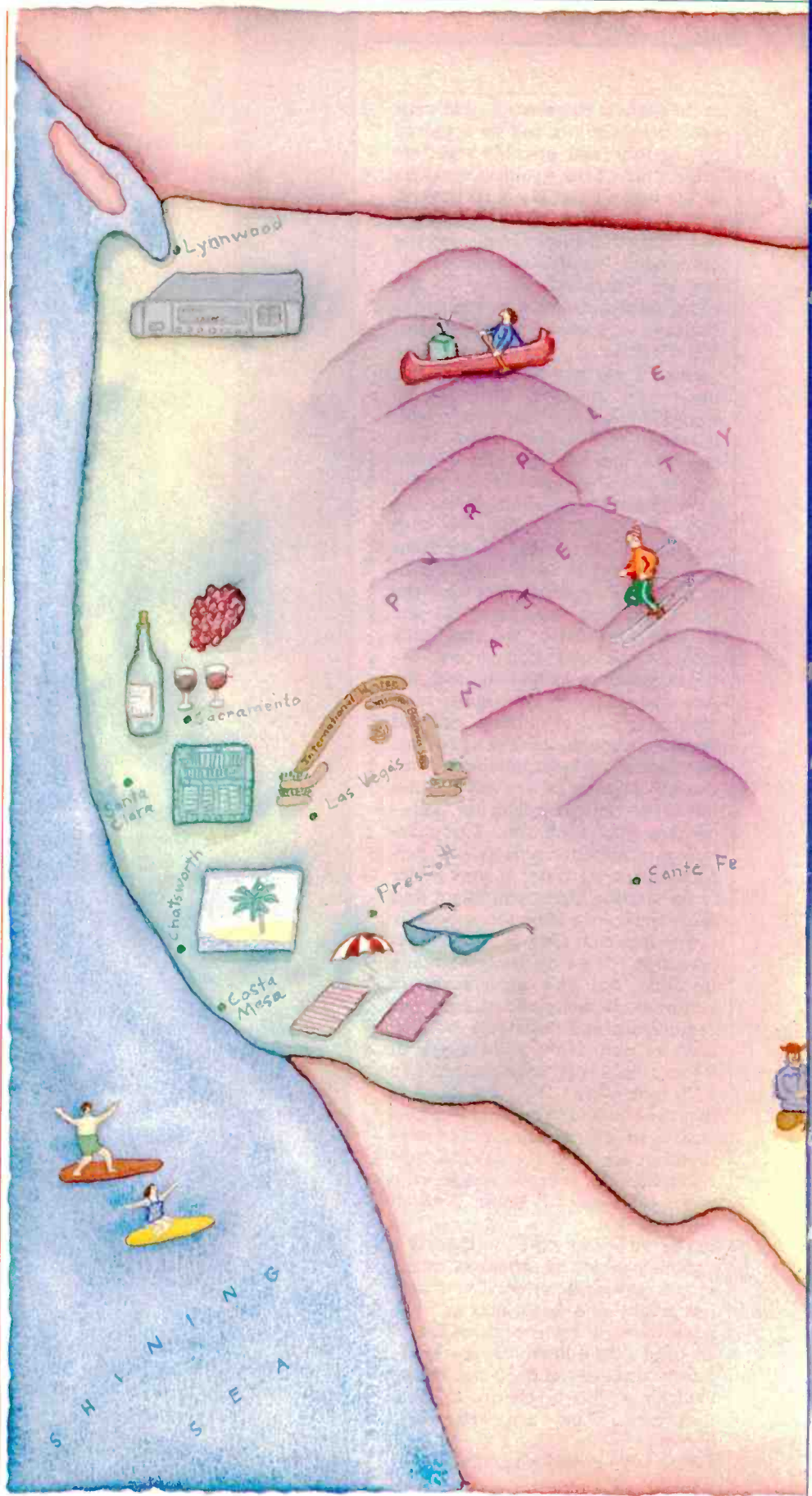


AMERICAN audio is enjoying a new surge of growth, stimulated by a surprisingly rich selection of new hi-fi consumer products.

Many product categories, such as Compact Disc players, audio-video receivers, and hi-fi VCR's, have come into existence only recently. New technologies, interacting with changing trends in music and allied arts, are leading to new forms of entertainment such as music videos, interactive CD's, and the illustrated CD. Some television programs have hi-fi sound now, as stereo broadcasts become available to more and more people. As a result, the demand for good audio equipment is also increasing. Excitement is in the air, because audio is on the move again.

The Compact Disc and stereo TV are playing a major role in generating excitement about hi-fi. Suddenly, audiophiles are appreciating the sheer joy of *listening* to music more than ever, and untapped audiences for hi-fi are being awakened for the first time. The clean, clear sound of a CD immediately wins over first-time listeners through its audible excellence. And imagine how enjoyable this year's miniseries extravaganzas will be in hi-fi stereo.

But where does the American audio industry fit into all of this?



ILLUSTRATIONS: LONNI SUE JOHNSON





*Paul Klipsch's famous Klipschorn, a fully horn-loaded speaker made in Hope, Arkansas, is one of the few indirect-radiator systems on the market. The folded-horn drivers in Klipsch speakers provide a more efficient coupling of the diaphragm to the surrounding air mass than do ordinary speakers that move the air directly with cones or domes.*



*Matthew Polk of Polk Audio in Baltimore, Maryland, is prominent among the American designers who consider psychoacoustics a path to greater realism in reproduced sound. Polk's flagship speaker system, the SDA-SRS, uses the Stereo Dimension Array configuration to improve stereo imaging. The four main bass/mid-range drivers in each speaker are combined with a set of identical drivers that reproduce the opposite channel's signal in reversed polarity to cancel interaural crosstalk. The speaker's four tweeters are in the center of the upper panel, and its 20-inch bass passive radiator is at the bottom.*

While much of the equipment seems to be made in Japan, and you can't buy a receiver made in Pittsburgh, or a tape recorder made in Albuquerque, American manufacturers have carved impressive niches for themselves in the audio marketplace, especially in the areas of psychoacoustics (speakers) and high-end equipment. They are doing what the European auto industry did in response to American success in mass-producing of cars: concentrating on quality, not quantity.

Many American audio companies are small, with only a handful of employees led by a senior engineer, a "master craftsman" of audio technology with a strong personality, who watches over every stage of production. The sophisticated equipment made in these shops always has the special touches and style of the man behind it, a tradition that began with men like Avery Fisher and H. H. Scott and is flourishing today in the work of people like Matthew Polk and Bob Carver. The result? Innovatively designed, superbly crafted equipment that places Americans at the forefront of audio technology.

In contrast, most manufacturers in the Far East concentrate on mass producing audio equipment at low cost. From them, we get the basic Fords, Plymouths, and Chevrolets of audio. But in response to the question of how American companies compete with the Japanese, Threshold's Nelson Pass replied, "I don't consider them competition. In fact, they make better customers than competitors." Affluent Japanese who value good sound buy Threshold amplifiers for the same reasons affluent Americans buy Mercedes automobiles.

### *Present Accomplishments*

Currently, some of the most exciting and innovative developments in American audio technology are concentrated in broadcasting—an industry where audio advances are slow to take shape. Multichannel television sound (MTS) has given TV a stereo audio signal with hi-fi quality. As a result producers are paying close attention to the dramatic effects of sound in TV productions. Even played through an average hi-fi system, a TV show with a good soundtrack can be very exciting.

Heading the group responsible for the development of stereo TV was Les Tyler, vice-president of engi-

neering for the American company dbx. Like the established system for broadcasting stereo FM programs, the new stereo TV system involves two separate signals, which are decoded in appropriately equipped receivers. One signal represents the sum of the left and right channels (L+R), and is thus equivalent to mono, and the other represents the difference between them (L-R). The MTS system broadcasts the mono signal using frequency modulation but the difference signal with amplitude modulation, and dbx noise reduction keeps reception quiet.

Several designers have developed circuits to reduce the noise of FM stereo at the receiver. Larry Schotz of LS Research has developed a circuit—which he keeps improving—that reduces noise by blending the stereo channels in a *dynamic* fashion. The blending is controlled by the program's moment-to-moment frequency content and modulation level and by the strength of the received signal. Although this system reduces separation together with noise, the effect of the blending is inaudible except in its hiss reduction. Schotz circuitry is included in products from Proton, NAD, and others.

Bob Carver of the Carver Corporation has designed receivers and tuners featuring a circuit that uses program information in the relatively quiet mono FM signal to synthesize a low-noise difference signal with compatible frequency and amplitude characteristics. Under noisy conditions the synthesized difference signal smoothly and automatically replaces the actual broadcast difference signal.

The latest approach to the problem of making the noise level and range of FM stereo equal to mono reception is FMX, the brainchild of Emil Torick at CBS Technology Center. Like most noise-reduction systems, FMX is a companding process that compresses the difference signal at the transmitter and then expands it at the receiver, restoring the original information together with a 20-dB noise reduction. Unlike other noise-reduction systems, FMX is entirely compatible with the existing stereo broadcast system and will not interfere with reception by existing receivers. FMX decoders are inexpensive to manufacture, so the prices of new receivers should not increase dramatically. According to Julian Hirsch and others who



*Allison Acoustics speakers (above) are designed by acoustician Roy Allison in Natick, Massachusetts, so as to couple bass energy to the listening room without the upper-bass and lower-midrange variations in power response that affect many installations.*

*The Bose 901 (below) was the first commercial speaker using the Direct/Reflecting design of MIT's Dr. Amar Bose. Bose loudspeakers are intended to simulate a concert hall, where much of what we hear has been reflected by walls and other surfaces before reaching our ears.*





*The Shure V-15 cartridge, a classic American audio product made in Evanston, Illinois, is widely considered the quintessential moving-magnet design.*

*At Magnepan in White Bear Lake, Minnesota, Jim Winey makes Magneplanar speakers with large, thin plastic diaphragms that are descendants of his early ribbon designs like the one below.*



*The Ohm Walsh 4, a classic omnidirectional speaker made in Brooklyn, New York, is designed according to the acoustic theories of Lincoln Walsh.*



have heard demonstrations of FMX, the results are excellent.

Digital techniques are finding broadcast applications too. In Boston, WGBH uses the dbx 700 digital audio processor for live broadcasts of the Boston Symphony. The processor serves as a noise-reduction system in the microwave link from Symphony Hall to the transmitter, and the improvements in clarity and detail are substantial. Recently the dbx 700 was used for the first nationwide live digital broadcast on National Public Radio. The occasion was an all-Ravel concert by the Swiss Romande Orchestra at MIT's Kresge Auditorium. The digitally encoded signal went by microwave to the NPR satellite uplink and was received across the country by about a dozen stations equipped with dbx 700 decoders. (As with digital tape recording, broadcasting the digital audio signal requires the bandwidth of a TV channel.) For the stations not equipped with decoders, NPR used the regular audio channels on the satellite.

This high-quality audio transmission technique will become important for TV broadcasting too. Combined with the MTS stereo audio signal, it could make music on television sound spectacularly realistic in your home. Programs such as Live from Lincoln Center would have incredible clarity, as would any imaginable music program, from a live Christmas Eve concert or the Grammy Awards Show to the rededication ceremonies for the Statue of Liberty with the Boston Pops on the Fourth of July.

### *American CD Players*

Through Philips in the Netherlands and Sony in Japan, other countries got a head start in making Compact Disc players, but American companies are contributing in this field by refining the technology and manufacturing procedures.

Paul McGowan, president of PS Audio, criticized Japanese CD players in a *New York Times* article (January 30, 1986): "The real problem is that they've surrounded all this Buck Rogers technology with parts no better than you find in a Japanese transistor radio." McGowan's company modifies a stock Philips 2040 CD player by replacing all the analog circuits and beefing up the power supply. PS Audio inserts a passive analog pre-filter to remove the high-amplitude spikes at 176 kHz that can trigger an oper-

ational amplifier into producing transient intermodulation distortion (TIM). They replace the integrated-circuit (IC) op amp with one made from discrete circuitry to eliminate that source of distortion completely. The entire audio circuit has no capacitors in the signal path.

McIntosh is building CD players using Philips transports and digital circuits. But the rest is all McIntosh, rather than a rebuilt Philips player. According to Gordon Gow, the company was concerned that, in comparison with a good turntable, tonearm, and cartridge system, a CD player's high end was a bit too harsh. To combat this problem, engineer Sidney Corderman designed an analog filter to remove ultrasonic intermodulation products.

The work of both these companies exemplifies what many U.S. audio manufacturers are doing. They are very particular about the quality of the parts they use, and they are finicky about refinements of circuit design. They don't use an IC chip simply because it's expedient. They use it with knowledge of its characteristic distortion—and how to overcome it. They use capacitors where they help and keep them out of the signal path. That kind of approach to design and construction leads to the excellent sound of American audio equipment.

### *Speakers*

Perhaps the single most significant American contributions to audio technology have been in the area of speaker design and the study of psychoacoustics. It's difficult to forget the work of men like Edgar Villchur (Acoustic Research), inventor of the acoustic-suspension system and the dome tweeter, Amar Bose, with his Direct/Reflecting speaker system, and Paul Klipsch, with his horn-loaded speakers. Pioneering work also came from companies such as Advent, Infinity, JBL, Ohm, Thiel, and Allison.

American research in psychoacoustics has led to products like Matthew Polk's Stereo Dimension Array (SDA) speakers, Mark Davis's dbx Soundfield speakers, Jim Thiel's time- and phase-coherent speakers, and Ken Kantor's Acoustic Research Magic speaker with its delayed ambience subsystem. Other advanced designs have come from Acoustat, Snell, Dahlquist, Fried, and Boston Acoustics.

American speakers have also ben-



effited from advanced construction techniques. New materials including high-temperature glues and a variety of lightweight cone materials such as titanium and polypropylene have helped to improve speaker performance. ADS, for example, uses more than thirty different kinds of adhesives, each for a different purpose, according to marketing vice president Larry Daywitt.

The dbx Soundfield speaker gives special attention to the problems of off-axis radiation; a listener can walk around the room and the stereo image will remain stable. Matthew Polk created speakers with lifelike three-dimensional imaging by giving attention to details of cabinet-edge reflections and phase information. Jim Thiel achieved a time- and phase-coherent speaker through sloping baffles and synthesized first-order crossover networks. Ohm speakers incorporate the work of the late Lincoln Walsh, who theorized that a speaker's radiating surface does not really behave like a piston, nor can it be made to. Rather, he said, it behaves like a perfect wave transmission line.

Timothy Holl—now at Bose, previously at Wharfedale and Acoustic Research—observes that speakers are converging on the same kind of sound. According to Holl, "The search for the neutral speaker inevitably leads to the same results." The world market for speakers also has caused some of the uniformity, because a good speaker sells well everywhere. In the United States, the old distinction between East Coast and West Coast speakers is nearly gone. As speaker design becomes more rational, everyone is able to approach that elusive ideal: neutral sound quality.

### *Yankee Ingenuity*

The basic technology for digital audio is essentially American in origin. Philips and Sony applied that knowledge to develop the Compact Disc, but they could not have done it without American computer technology. Bell Labs has been a fountain of key developments, including the work of Claude Shannon, who founded the science of information theory, and John Nyquist, whose famous theorem established the minimum sampling rate needed to define a frequency.

Another contribution from Bell Labs was the transistor. Without the benefits of the transistor's low pow-



*Designed by J. Richard Aylward at dbx, in Newton, Massachusetts, the dbx DX3 Compact Disc player (above) stands out from the crowd with its Digital Audio Impact Restoration circuit, variable compression, and variable ambience control.*

*From its U.S. base in Norwood, Massachusetts, NAD markets receivers, like the Model 7140 below, that combine high output-current capability, wide dynamic headroom, and a Dynamic Separation tuner circuit designed by Larry Schotz that reduces noise on stereo FM.*



*The pure Class A power amplifiers from Threshold, in Sacramento, California, utilize Nelson Pass's Stasis technology—which is also licensed to Nakamichi in Japan. Stasis amplifiers, like the Threshold Model S/500 shown below, use no negative feedback, and their performance is virtually independent of load characteristics, signal dynamics, and spectral content.*





The Carver receiver, made in Lynnwood, Washington, unites two of Bob Carver's proprietary designs in one package: a Magnetic Field power amplifier and the Asymmetrical Charge-Coupled Detector, which reduces noise on weak stereo FM signals.

Larry Schotz designed Recoton's V622 TV Stereo Decoder (below), which picks up the stray r.f. signals that leak out of almost any TV set and decodes the stereo audio if any is present. It also provides Dynamic Noise Reduction and stereo synthesis.



Some audiophiles feel that William Johnson's tube amplifiers for Audio Research in Minneapolis produce a softer, warmer, and more musical sound than amps with transistor output stages.



er consumption, small size, and cooler operation, most of the electronic products we now enjoy would not exist. Try building an all-tube CD player, if you don't believe that! The next development up the solid-state ladder was the integrated circuit, developed by Fairchild and Texas Instruments. Without IC chips, CD players would be the size of refrigerators.

The laser, too, is the product of many American researchers (even Alexander Graham Bell proposed transmitting sound on modulated light waves). The cross-interleave Reed-Solomon error-correction code used by CD's was originally intended for telemetry data from deep-space probes. The spectacular pictures we've received from Uranus, Saturn, and Jupiter are good examples of that technology in a visual application.

In short, American audio technology has made the digital revolution in audio possible. Without American scientists' driving curiosity and enterprising spirit, audio in every country around the world would be quite different today.

### "Not with a Bang . . ."

But there is a dark side to all of this success, past and present. In the view of many observers, including Sony chairman and co-founder Akio Morita, America is losing its ability to manufacture consumer goods. Morita, quoted in the March 3, 1986, issue of *Business Week*, calls this a "hollowing of American industry." Tomlinson Holman, who was chief audio engineer at Advent, was a co-founder of Apt, and now is conjuring audio effects at Lucasfilms, pointed to the "retreat into the high end" and observed that American investors are not interested in hi-fi equipment manufacturing.

Andy Petite, of Boston Acoustics, echoed this point of view, citing the "demise of support industries," particularly chip makers, in the U.S., and the "gradual shift of electrical manufacturing in general" to other countries. Threshold's Nelson Pass noted that the same amount of silicon goes into one of Motorola's output transistors as its 68020 computer chip. Because the demand for the 68020 is greater, and the profits are greater, Motorola doesn't make as many output transistors.

The tendency of American companies to market imported goods has led to an erosion of audio design





work in the U.S. Les Tyler of dbx observed that his company is one of the few that still maintain a large design staff. When the practice of foreign manufacturing first began, an American company would design the equipment and have it made to its specifications. Today, an American company is likely to buy existing equipment, already designed by a foreign manufacturer, and simply put its own logo on the product. The function of the American company is little more than to market the product.

New communications media, from Edison's cylinder and silent movies, to the telegraph and telephone, to radio, television, and satellites, have tied nations and people together in increasingly complex ways. As a result, manufacturing and consumption tend to spread evenly around the planet.

At ADS, speakers contain parts from all over the world—American drivers, Japanese crossover coils, and German cabinets. The University of Michigan is making a study of ADS to see how and why the company has been so successful with its international approach. But ADS is not alone in the idea of a "world speaker." If you look inside just about any piece of audio equipment, you'll find parts from all over the world.

Another way that business and industry disperse internationally is through reinvestment. Japanese and German companies are building cars in America, Sony builds TV sets in San Diego, TDK has a blank-tape plant in Irvine, California, and Sony operates a CD pressing plant in Terre Haute, Indiana. Philips and DuPont recently signed an agreement to build CD pressing plants in several countries. The first will be in the U.S., in North Carolina. Many American companies are licensing their inventions to foreign manufacturers. For example, Yamaha uses Carver circuits in its power supplies. Nakamichi uses Nelson Pass's Stasis circuits in its amplifiers. Many cassette decks contain both Dolby and dbx noise-reduction circuits made under license.

### The Future

The American audio industry has had its ups and downs in the last couple of decades and has had to make a variety of adjustments to changing market conditions. But American audio technology has never wavered. It is now moving

*Made in Binghamton, New York, since 1949, McIntosh components have always been regarded by some as the "ultimate" in high-end American audio products. Their reputation for durability is such that there are audiophiles who actually take pride in how old their working McIntosh components are! The company's recent introductions include (top to bottom) the MR 510 FM tuner, with six station presets and a headphone jack; the C34V Audio/Video Control Center, with built-in equalizer and expanding noise reducer; and the 270-watt-per-channel MC 7270 power amplifier.*



*Designed by Leo Spiegel and built deep in the great American "speaker range," in Randolph, Massachusetts, Apogee speakers use ribbon drivers instead of conventional cones or domes as woofers, mid-ranges, and tweeters. Suspended in a strong magnetic field, the lightweight metallic ribbons replace both the magnetic voice coil and the diaphragm of an ordinary driver.*





beyond the hi-fi industry and into some completely new fields.

Current research involves artificial intelligence, voice recognition, speech synthesis, and, most important, new applications of psychoacoustics made possible by digital signal processors.

Ray Kurzweil of Kurzweil Music Systems, Inc., speaking at the Boston Computer Society, demonstrated an advanced music synthesizer, a voice-activated word processor, and a voice-activated database manager. Imagine talking to your typewriter and watching the words appear on the paper. Some of these products may reach the market before the end of the year!

Kurzweil's music synthesizer stores instrument definitions in large read-only-memory (ROM) chips and uses artificial intelligence to turn the data into realistic sounds. The "bite" of the bow against the strings is hair-raisingly real. The piano sounds better than some conventional pianos, and it is cheaper to make. But the real prize of the synthesizer is the intelligent sequencer (on-board digital recorder). At the BCS meeting, a musician used it to create a lively Dixieland combo for the audience.

Voice-activated remote controls will become quite common as the technology is refined and put onto microchips. Combine this with speech synthesis, and your system could respond in various ways. Of course, manufacturers would give their equipment "personalities" to make them more user-friendly. Some day soon you might say, "Murphy, turn on the VCR at 8:30 on Channel 25, and stop it at 10:30." The system would answer, "Okay, Bill, but the tape in the machine only has thirty minutes left, so you need to put in a new tape."

New work in psychoacoustics will lead to better speakers. Current tests and measurements don't tell enough about how speakers really sound. Phase response in the crossover region, power radiation into a real room, and other related characteristics currently

are receiving a lot of attention. Digital signal processors will lead to new speakers with much more realistic spatial illusions than present speakers produce. Bob Carver is about to introduce a new speaker, only two inches thick, with holographic imaging capabilities (though not using the same circuit as his Sonic Hologram Generator).

In electronics, too, many measurements are becoming obsolete, and new specifications will replace some of the current ones. Parameters are being more closely defined, and it will become harder for careless designers to measure only what is convenient to measure while overlooking characteristics that control actual performance. The search for rational definitions of performance is an important contribution to the high quality of American equipment.

Other engineers are looking for better digital-to-analog (D/A) converters. The successive-approximation method now used is not necessarily the best. The design group at dbx is developing new types of D/A converters with lower distortion. They are also looking for better-sounding anti-aliasing filters and

developing 18-bit converters for greater resolution.

In amplifiers, Threshold's Nelson Pass is moving on from his critically acclaimed Stasis amplifier and is working on a pulse-width-modulation power amp and digital-switching power supplies. Bob Carver is using his proprietary Magnetic Field circuitry to develop new lightweight, high-power amplifiers. William Johnson of Audio Research is constantly improving his all-tube designs, and innovations can always be expected from people like Larry Schotz, Tomlinson Holman, Ralph Yeomans (Soundcraftsmen), David Hafler, Mark Levinson, and companies such as Crown, Adcom, Counterpoint, and Acoustat.

A few years ago, Acoustic Research demonstrated the Adaptive Digital Signal Processor, which analyzed the colorations created by the interactions of a speaker with a room. Unlike some of today's self-adjusting graphic equalizers, it included the reflections in the room and even from the cabinet edges in its analysis. It then created an inverse filter to undo these effects. In those days, it was too expensive to be a practical product, but, as Les

Tyler recently observed, it could become a practical consumer product now. And once you remove the walls of the listening room, what's to stop you from putting in the walls of any other room? If you don't like the acoustic ambience of a recording, you could take the orchestra out of Carnegie Hall and put it into the Amsterdam Concertgebouw.

An audiophile of the not-too-distant future might say to his voice-recognition controller, "Murphy, this performance is terrible. Put that orchestra into a hockey arena." The system might answer back, "Okay, Bill. Do you prefer the arena in Minneapolis or the one in Montreal?" □

*On the cover this month are five prime examples of American excellence in loudspeaker technology. Clockwise from lower left: Klipsch Fortes (from Hope, Arkansas); the Bose 10.2 (Framingham, Massachusetts); Boston Acoustics' A40 (Peabody, Massachusetts); Polk Audio's SDA Compact (Baltimore, Maryland); and AR's MGC-1 (Canton, Massachusetts).*



*Steve Birchall is former editor-in-chief of Digital Audio magazine and a partner in the computer and publishing consulting firm Kottwitz & Associates in Merrimack, New Hampshire.*

# MADE IN CANADA

Audio north of the border



Hi-Fi enthusiasts in the U.S. are often surprised to learn that our large, sparsely populated northern neighbor is a hotbed of audio enthusiasm. A lot of Canadians love hi-fi and take it very seriously.

It's easy to attribute the Canadian enthusiasm to the long, cold winters, but Alan Lofft, editor of the Canadian magazine *Sound and Vision*, thinks there is more to it than that. "There is a certain pride and independence of spirit among Canadian audiophiles," he says. "We have a small but vigorous audio industry, and some important research on loudspeakers is being done in Canada."

The research Lofft refers to has been going on for more than fifteen years at the National Research Council (NRC) in Ottawa under the guidance of Dr. Floyd E. Toole. The NRC, a government organization that provides scientific and technical research to support Canadian industry, recently gained world-wide attention for developing the robot manipulator arms used on NASA's space shuttles.

According to Dr. Toole, the goal of his research is "to develop a cookbook for producing and interpreting loudspeaker technical data in a way that corresponds to the results of subjective listening evaluations." Apparently the research has begun to bear fruit. "We can now [use measurements to] identify loudspeakers that are in the top 5 percent of listener preference," said Toole in a telephone interview.

Several Canadian loudspeaker manufacturers have been using the NRC's facilities and standardized measurement and evaluation techniques to design speakers for the home hi-fi market. The first commercial successes to come out of this collaboration were the PSB 50R and 70R speakers. NAD will start distributing PSB products in the U.S. later this year. Products from Paradigm, Rega/Camber, and others have also been developed with the NRC, and the NRC's loudspeaker facilities aren't limited to Canadians.

"We're open to companies around the world," Toole said.

Two other Canadians highly respected in international audio circles are Dr. Stanley P. Lipshitz and Dr. John Vanderkooy, both of the University of Waterloo, Ontario. They have collaborated on research papers on tone-

arm dynamics, RIAA equalization networks, digital audio, amplifier design, and loudspeaker crossover networks, to mention a few. Another Canadian who has contributed to loudspeaker research is Gilbert Hobrough of Vancouver, British Columbia, who has devoted the past thirty years to developing a viable ribbon loudspeaker.

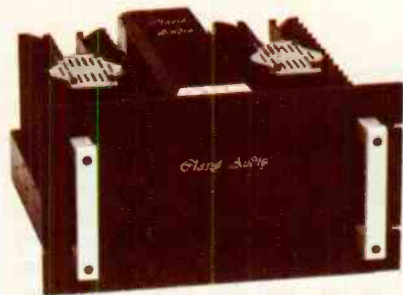
Canada has its high-end contingent too. Son Hi-Fi Video is the only French-language hi-fi magazine in Canada, and its directeur (editor), Michel Prin, gives his readers a healthy dose of high-end philosophy and products in each issue. Indeed, some of Canada's most respected high-end audio companies are located in Quebec. The Oracle turntable has long been a high-end favorite in the U.S., and although the company fell on hard times a few years ago, it is now back in business. Classé is a new company on the American scene, but its current Class A amplifier has been well received by the "underground" audio press. Another small Quebec company, Meitner, also makes amplifiers, but the products have yet to find their way south.

Bryston, an Ontario-based professional audio company, makes amplifiers that have earned a good reputation in the U.S. high-end market. Magnum/Dynalab, which makes the popular FM Sleuth antenna, is also in Ontario. The company recently introduced its FT-101 tuner, and marketing manager Marv Southcott says that it is making 2,000 of the tuners a year, as well as manufacturing tuner circuit boards for other companies.

In terms of overall size, however, the biggest hi-fi operation in Canada is Audio Products International (API). This Markham, Ontario, company manufactures Mirage, Paisley, Energy, Sound Dynamics, and dB Plus speakers, each brand maintaining a separate identity and separate design goals. API has its own research laboratories, but Energy and Paisley work with Lipshitz and Vanderkooy at the University of Waterloo, while Mirage products are designed by Kevin Voecks, whose lab is in Los Angeles.

As more and more Canadian audio products find their way into U.S. homes, Canada's reputation for research and development will spread. It's time we recognized south of the border that Canadians have made some significant contributions to audio technology.

—Gordon Sell



Classé Audio's DR-3 Class A power amplifier is rated for 25 watts per channel into 8 ohms with 7 db dynamic headroom. Price: \$2,895 (U.S.), not including the \$299 "brick" shown sitting on top.



Magnum-Dynalab's FT-101 is an audiophile analog FM tuner with a digital readout. \$549.



This Mirage subwoofer/satellite system (\$670) is one of the many systems made under different brand names by Audio Products International (API).

# SYSTEMS

## AN AMERICAN DREAM

by Michael Smolen



From simple belt-drive turntables to phase-array speaker systems, American hi-fi manufacturers enjoy a position at the forefront of audio technology. They have a reputation for quality construction, and they have the advantage of numerous service centers. For some American audiophiles, at least, there is a certain satisfaction in listening to Bruce Springsteen records through components that were born in the U.S.A.

When the editors of STEREO REVIEW set out to assemble a true red, white, and blue hi-fi system, however, we found that it required a little searching. Tossing aside the constraint of price and the subjectiveness of the term "high end," we selected a group of components that represent advanced technology from fifteen American companies and put them together in a dream system that I, for one, would love to come home to.

In some areas, such as speakers, we had an embarrassment of riches to choose from. In others, such as cassette decks, we had to fudge a bit and choose units that were manufactured abroad for American companies. We are prepared to defend the quality of all the components included here, but this shouldn't be interpreted to mean that there are not equally good units available from other manufacturers.

The backbone of any component hi-fi system is its amplifier, and Carver's M-1.5t Magnetic Field power amplifier (\$799) is outstand-

ing in its class. It is dramatically lighter, smaller, and less costly than other amps of similar capabilities. The 350-watt (8-ohm) M-1.5t amp weighs just 16 pounds and fits into a double EIA standard rack space.

The preamplifier in our system is Threshold's FET Two Series II (\$1,290). The FET Two is a two-channel, noninverting, field-effect-transistor preamp that combines a massive power supply, active and passive equalization, and precision metal-film resistors and polystyrene-film capacitors.

The Hafler name has long been synonymous with audio quality, and the quartz-controlled, digital-synthesis DH-330 FM tuner (\$460) upholds that tradition. Its front end utilizes a triple-tuned circuit between the r.f. stage and the mixer, in addition to a tuned antenna circuit. The r.f.-stage and mixer semiconductors are dual-gate MOSFET's, which have excellent signal-handling capability and good rejection of spurious signals. It is also available in kit form (\$385).

While most of the components in our system don't really need any sonic assistance, no true audiophile is completely satisfied with anything he owns. For those who think they can analyze and correct for rectangular steel-frame and wallboard living-room construction or insist on running a 32-Hz slider up to +15 dB, we've included Audio Control's C-101 equalizer/analyzer (\$429).

Although CD's have captured the hearts of many hi-fi enthusiasts, few audiophiles have thrown away their

*Custom Woodwork & Design's Magic Low-boy cabinet opens by remote control to reveal the entire system. Photos by Tohru Nakamura. Alpha table and chair courtesy Bieffe; ceramics courtesy Dapy.*





turntables, and some are convinced that the LP still delivers a truer reproduction of sound than the CD. If you'd like to make the comparison yourself with a state-of-the-art turntable, AR's ETL-1 (\$700) is an excellent choice.

Inside the hand-rubbed cherry-finish base, there's an optical-quality sapphire thrust bearing and a self-centering tungsten-carbide ball, electronic speed control, and three-point dual-spring suspension.

To go with the AR turntable, we chose the Well-Tempered Lab's tonearm (\$500). Its arm tube is connected by a short rod at the pivot point to a small disc suspended in a tub of viscous silicone fluid. The tube assembly is suspended from above by short monofilament lines attached to the disc and skewed slightly to apply antiskating pressure.

In the tonearm we installed Stanton's Epoch Series HZ9S moving-magnet cartridge (\$250), which has an advanced low-mass design (4 grams). The tubular cantilever has a sapphire overlay for strength and resistance to environmental contaminants. Frequency response is rated as 10 to 30,000 Hz.

Harman Kardon's TD392 Ultra-wideband Linear Phase cassette deck (\$550) was designed in Japan with input from Harman America. Featuring an ultrawideband frequency response of 20 to 22,000 Hz  $\pm 3$  dB, the three-head TD392 has Dolby B and Dolby C noise-reduction systems and Dolby HX Pro headroom-extension circuitry. (See the test report on the TD392 in this issue.)

McIntosh audio equipment is something of an American tradition, and it has never been cheap. At \$1,399, McIntosh's MCD 7000 is near the top of the price scale for CD players. The MCD 7000 has a full complement of programming features and 16-bit equivalent D/A conversion through quadruple oversampling (176.4 kHz).

A couple of years ago, dbx shook the speaker world with its Soundfield imaging technology. Loudspeakers using this dbx-developed phase-array technology offer a significant improvement in the spatial perspective of music reproduction in the home. The system creates a sonic image with a realistic breadth and depth of field that is identical for virtually any listening position. The flagship speaker for dbx was the Soundfield One, recently updated to the Soundfield 1A (\$2,950).





The AR ETL-1 turntable, top left, has a twenty-four-pole synchronous a.c. motor. It has been fitted with the Well-Tempered Tonearm, which has a skewed bifilar convergent-ligament suspension, and a Stanton HZ9S cartridge with a Stereo-hedron II diamond stylus. Grouped center left are McIntosh's MCD 7000 CD player, with quadruple oversampling; Harmon Kardon's TD392 cassette deck, with three sendust/ferrite heads; and Audio Control's C-101 graphic equalizer/analyzer (center points at 32, 60, 120, 480, 960, 1,920, 3,840, 7,680, and 15,500 Hz). At bottom left is the heart of our system:

Hafler's DH-330 FM tuner, with five-station nonvolatile memory, Threshold's FET Two Series II preamplifier, and Carver's 350-watt M-1.5t Magnetic Field power amplifier.

Our selected audio/video components, above, include Realistic's Minimus 7W speakers, which have 4-inch high-compliance woofers and 1-inch extended-range dome tweeters, Vector Research's feature-laden V-5000 VHS Hi-Fi VCR, Shure's HTS 5000 Surround Audio Processor, and RCA's 27-inch Colortrak 2000 stereo monitor, which processes a broadcast signal with up to three times the color resolution required by the NTSC standard.

While many video components are "born in the U.S.A." in terms of design, they are manufactured elsewhere. On the other hand, some companies, such as Sony, are making foreign-designed video components in the U.S. The video equipment in our system is as close to Old Glory as we could come.

From RCA's line of Full-Spectrum black-matrix TV monitors we chose a 27-inch Colortrak 2000 (\$1,200). Its features include stereo multichannel television sound (MTS) and secondary audio program (SAP) capability, RCA's 110-degree picture tube with square corners and a flatter surface, and programmable/automatic *everything!*

For a complete description of the Vector Research V-5000 videocassette recorder (\$995), read the test report on the unit elsewhere in this issue. In the meantime, however, let me tease you with some of the V-5000's on-board goodies: HQ video circuitry, VHS Hi-Fi sound, four-head/dual-azimuth configuration, MTS/SAP capability, dbx and Dolby noise reduction, audio level meters, and, my favorite, a 30-second commercial-skip function on the remote control.

A SYSTEM of this caliber requires a unit to decode Dolby Surround programs. Shure's HTS 5000 Surround Audio Processor (\$599) provides up to six channels of audio output when it is combined with an auxiliary amp and a secondary pair of speakers. The HTS 5000 features special decoder circuitry (Shure's Acra Vector system) for directional accuracy and an Acoustic Space Generator to create the illusion of being totally immersed in sound.

For secondary speakers in the video system we've chosen Realistic's Minimus 7W (\$100 a pair in an unobtrusive walnut-veneer cabinet), which can handle 40 watts and has a frequency response of 95 to 20,000 Hz, just right for a surround system's auxiliary speaker.

So what do you do with a system that's worth \$14,221? You put it into one of the nicest high-tech cabinets you can find—Custom Woodwork & Design's Magic Lowboy. It can house a large number of components in a variety of configurations. When the cabinet is closed, the entire system is concealed. Activating the remote control raises the components out of the cabinet for complete access. The Magic Lowboy costs \$2,000 in oak and \$2,300 in American walnut. □



# AMERICAN AUDIO COMPANIES

**I**t isn't always easy to say which audio companies are American and which aren't. Components manufactured in the U.S. may have been designed by overseas companies, and vice versa. For this directory, we have selected companies that are primarily American owned as well as companies that are partly American owned and

design or manufacture here. This directory is based on addresses of companies that responded to information requests for *STEREO REVIEW's* Buyers' Guides, so those that did not respond may not be listed here. Only home-audio companies are listed; a directory of car stereo manufacturers appeared in our May issue.

## BY WILLIAM BURTON AND STAFF

**AAL (American Acoustics Labs-Mitek)**, One Mitek Plaza, Winslow, IL 61089. *Speakers.*

**Ace Audio**, 532 5th St., East Northport, NY 11731. *Accessories, signal processors.*

**Acoustat (David Hafler Co.)**, 5910 Crescent Blvd., Pennsauken, NJ 08109. *Power amplifiers, preamplifiers, speakers.*

**Acoustic Interface**, P.O. Box 6632, Santa Barbara, CA 93160. *Speakers.*

**Acoustic Research**, 330 Turnpike St., Canton, MA 02021. *Turntables, accessories, speakers.*

**ADA (Audio Design Associates)**, 602-610 Mamaroneck Ave., White Plains, NY 10605. *Power amplifiers, accessories.*

**ADC (Division of BSR)**, 71 Chapel St., Newton, MA 02195. *Turntables, cartridges, signal processors.*

**Adcom**, 11 Elkins Rd., New Brunswick, NJ 08816. *Power amplifiers, preamplifiers, tuners, cartridges, accessories, Compact Disc players.*

**ADS**, One Progress Way, Wilmington, MA 01887. *Receivers, integrated amplifiers, tuners, turntables, cassette decks, accessories, speakers, Compact Disc players.*

**Advent (Division of Int'l. Jensen, an Esmark Co.)**, 4136 N. United Parkway, Schiller Park, IL 60176. *Speakers.*

**Alaron**, 185 Park St., P.O. Box 550, Troy, MI 48099. *Pocket stereo.*

**Allison Acoustics**, 7 Tech Circle, Natick, MA 01760. *Speakers, signal processors.*

**Allsop**, 191 Calle Magdalena, #215, Encinitas, CA 92024. *Accessories.*

**Alphasonik**, 701 Heinz Ave., Berkeley, CA 94710. *Speakers.*

**R. B. Annis**, 1101 N. Delaware St., Indianapolis, IN 46202. *Accessories.*

**Aparture Products**, RFD #1, Route #2, Preston, CT 06360. *Accessories, speakers.*

**Aphex Systems**, 13340 Saticoy St., N. Hollywood, CA 91605. *Signal processors.*

**Apt**, 148 Sidney St., Cambridge, MA 02139. *Power amplifiers, preamplifiers, tuners.*

**Astatic**, Harbor & Jackson Sts., Conneaut, OH 44030. *Cartridges.*

**Audio Concepts**, 1631 Caledonia St., La Cross, WI 54603. *Speakers, signal processors.*

**Audio Control**, 6520 212th St. SW, Lynnwood, WA 98036. *Signal processors.*

**Audionics**, P.O. Box 969, University St., Portland, OR 97207. *Power amplifiers, preamplifiers, accessories, signal processors.*

**Audio Research**, 6801 Shingle Creek Parkway, Minneapolis, MN 55430. *Power amplifiers, preamplifiers, accessories, signal processors.*

**AudioSource**, 1185 Chess Dr., Suite G, Foster City, CA 94404. *Accessories, speakers, signal processors.*

**Audio Technology**, P.O. Box 94487, Schaumburg, IL 60195. *Accessories.*

**Babb Audio**, 3230-A Towerwood, Farmers Branch, TX 75234. *Speakers.*

**Barcus-Berry Electronics**, 5381 Production Dr., Huntington Beach, CA 92649. *Signal processors.*

**Bedini Electronics**, 13000 San Fernando Rd., #9, Sylmar, CA 91342. *Power amplifiers, preamplifiers, accessories.*

**Belles Research**, A-1 Country Club Rd., P.O. Box 307, E. Rochester, NY 14445. *Power amplifiers, preamplifiers, tuners.*

**Benjamin Music Systems**, 232 Sherwood Ave., Farmingdale, NY 11735. *Cassette decks, speakers.*

**Berning**, 1107 Candlelight Lane, Potomac, MD 20854. *Power amplifiers, preamplifiers.*

**BES**, 345 Fischer St., Costa Mesa, CA 92626. *Speakers.*

**Beveridge Loudspeakers**, 8141 E. 2nd St., Ste. 515, Downey, CA 90241. *Speakers.*

**Bose**, 100 The Mountain Rd., Framingham, MA 01701. *Speakers.*

**Boston Acoustics**, 247 Lynnfield St., Peabody, MA 01960. *Speakers.*

**Bozak**, 68 Holmes Rd., Newington, CT 06111. *Speakers.*

**Brown Electronic Labs**, 1233 Somerset Dr., San Jose, CA 95132. *Power amplifiers.*

**Bush Industries**, 342 Fair Oak St., Little Valley, NY 14755. *Audio furniture.*

**Carver**, P.O. Box 1237, 19210 33rd Ave. W., Lynnwood, WA 98036. *Receivers, power amplifiers, preamplifiers, tuners, accessories, signal processors, CD players.*

**Certron**, 1701 S. State College Blvd., Anaheim, CA 91331. *Blank tape, accessories.*

**Cerwin-Vega**, 12250 Montague St., Arleta, CA 91331. *Signal processors, speakers.*

**Chapman Sound**, P.O. Box 140, Vashon, WA 98070. *Speakers.*

**Clements Audio Systems**, 4354 Spring Valley Rd., Dallas, TX 75244. *Speakers.*

**CompuSonics**, 1355 S. Colorado Blvd., Suite 607, Denver, CO 80222. *Digital audio.*

**Conrad-Johnson Design**, 1474 Pathfinder Lane, McLean, VA 22101. *Power amplifiers, preamplifiers.*

**Counterpoint**, 10635 Roselle St., San Diego, CA 92121-1399. *Power amplifiers, preamplifiers, accessories.*

**Crown**, 1718 W. Mishawaka Rd., Elkhart, IN 46514. *Power amplifiers, preamplifiers, tuners, accessories.*

**Custom Woodwork & Design**, 7447 S. Sayer, Bedford Park, IL 60638. *Furniture.*

**Dahlquist**, 601 Old Willets Path, Hauppauge, NY 11787. *Speakers, signal processors.*

**DB Systems**, Main St., Rindge Center, NH 03461. *Power amplifiers, preamplifiers, accessories, signal processors.*





**dbx (Division of BSR)**, 71 Chapel St., Newton, MA 02195. *Accessories, speakers, signal processors, Compact Disc players.*

**DCM**, 670 Airport Blvd., Ann Arbor, MI 48104. *Speakers.*

**Dennesen Electrostatics**, P.O. Box 51, Beverly, MA 01915. *Power amplifiers, preamplifiers, cartridges, tonearms, accessories, speakers, signal processors.*

**Desktop Loudspeaker Systems**, P.O. Box 398, Simi Valley, CA 93062. *Speakers.*

**Discwasher**, 4309 Transworld Rd., Schiller Park, IL 60176. *Accessories.*

**DLK Acoustical Products**, 1405 Mendota Heights Rd., St. Paul, MN 55120. *Speakers.*

**Domus**, 1405 Mendota Heights Rd., St. Paul, MN 55120. *Speakers.*

**Dynaco by ESS**, 9613 Oates Dr., Sacramento, CA 95827. *Speakers.*

**Dynamic Acoustics**, P.O. Box 646, San Ramon, CA 94583. *Speakers.*

**Dynavector**, 1721 Newport Circle, Santa Ana, CA 92705. *Cartridges, tonearms.*

**Ego Systems**, 23 Pleasant St., #2, Northampton, MA 01060. *Speakers.*

**Emerson Radio**, One Emerson Lane, N. Bergen, NJ 07047. *Turntables, speakers, Compact Disc players.*

**Eminent Technology**, P.O. Box 6894, Tallahassee, FL 32301. *Cartridges, tonearms.*

**Empire Scientific**, P.O. Box 486, 55 Bloomingdale Rd., Hicksville, NY 11802. *Cartridges, speakers.*

**Epicure Products (EPI)**, 25 Hale St., Newburyport, MA 01950. *Speakers.*

**Epoch by Stanton**, Terminal Drive, Plainview, NY 11803. *Cartridges.*

**ESS**, 9613 Oates Dr., Sacramento, CA 95827. *Speakers.*

**Fanfare Acoustics**, 4650 Arrow Hwy. #4, Montclair, CA 91763. *Speakers.*

**Fosgate**, P.O. Box 70, Heber City, UT 84032. *Power amplifiers, signal processors.*

**Fostex**, 15431 Blackburn Ave., Norwalk, CA 90650. *Cassette decks, open-reel decks, signal processors, headphones, accessories.*

**Fried Products**, 7616 City Line Ave., Philadelphia, PA 19151. *Speakers.*

**Gale Electronics**, 875 Merrick Ave., Westbury, NY 11590. *Speakers.*

**General Electric**, Electronics Park, Syracuse, NY 13221. *Pocket stereo, Compact Disc players, accessories.*

**Genesis Physics**, 225 Heritage Ave., Portsmouth, NH 03801. *Speakers.*

**Geneva Group (Nortronics)**, 7255 Flying Cloud Dr., Eden Prairie, MN 55344. *Accessories.*

**GLI Integrated Sound Systems**, 1227 Walt Whitman Rd., Melville, NY 11747. *Turntables, speakers, headphones, signal processors.*

**GNP Loudspeakers**, 1244 E. Colorado Blvd., Pasadena, CA 91106. *Speakers.*

**Goldbug Labs by RMI**, 6074 Corte Del Cedre, Carlsbad, CA 92008. *Cartridges.*

**Gold Sound**, P.O. Box 141, Englewood, CO 80151. *Power amplifiers, speakers, signal processors.*

**Grado Laboratories**, 4614 Seventh Ave., Brooklyn, NY 11220. *Cartridges.*

**Grafyx**, 2201 S. Ford, Chicago, IL 60616. *Speakers.*

**Gusdorf**, 11440 Lackland Rd., St. Louis, MO 63146. *Audio furniture.*

**Guss Speaker Systems**, 215 W. 92nd St., New York, NY 10025. *Speakers.*

**Hafler**, 5910 Crescent Blvd., Pennsauken, NJ 08109. *Power amplifiers, preamplifiers, tuners, signal processors.*

**Harman Kardon**, 240 Crossways Park West, Woodbury, NY 11797. *Receivers, power amplifiers, preamplifiers, integrated amplifiers, tuners, turntables, cassette decks, signal processors, Compact Disc players.*

**Hartley Products**, 620 Island Rd., Ramsey, NJ 07446. *Speakers.*

**Heath**, Benton Harbor, MI 49022. *Receivers, power amplifiers, accessories, signal processors.*

**HiFonics**, 845 Broad Ave., Ridgefield, NJ 07657. *Speakers, accessories.*

**Induced Magnet Systems**, 115 Henry St., Freeport, NY 11520. *Cartridges.*

**Infinity Systems**, 7930 Deering Ave., Canoga Park, CA 91304. *Speakers, signal processors.*

**Innovative Techniques**, 703 Revere Dr., Herbertsville, NJ 08723. *Speakers.*

**Interaudio by Bose**, 100 The Mountain Rd., Framingham, MA 01701. *Speakers.*

**Intraclean by American Recorder Technologies**, 4395 Valley Fair St., Simi Valley, CA 63063. *Accessories.*

**Irish Magnetic Tape**, 270-78 Newtown Rd., Plainview, NY 11803. *Blank tape.*

**Jannis by John Marouskis Audio**, 2889 Roebbing Ave., Bronx, NY 10461. *Signal processors.*

**JBL (Harman America)**, 240 Crossways Park West, Woodbury, NY 11797. *Speakers.*

**Jensen Sound Labs**, 4136 N. United Pkwy., Schiller Park, IL 60176. *Speakers.*

**JSE**, 519 East Middle Turnpike, Manchester, CT 06040. *Speakers.*

**Kindel Audio**, 1710 Newport Circle, Suite O, Santa Ana, CA 92705. *Speakers.*

**Kinergetics**, 6029 Reseda Blvd., Tarzana, CA 91356. *Power amplifiers, preamplifiers, tuners, Compact Disc players.*

**Kinetic Audio**, P.O. Box 2147, Des Plaines, IL 60018. *Accessories, speakers, signal processors.*

**Klipsch**, P.O. Box 688, Hope, AR 71801. *Speakers.*

**Klyne Audio Arts**, 721 Howard Ave., Olympia, WA 98506. *Preamplifiers, accessories.*

**Koss**, 4129 N. Port Washington Ave., Milwaukee, WI 53212. *Headphones, accessories.*

**Krell Industries**, 20 Higgins Dr., Milford, CT 06460. *Power amplifiers, preamplifiers.*

**The Last Factory**, P.O. Box 41, Livermore, CA 94550. *Accessories.*

**Light Supply**, 2265 Westwood Blvd. #415, Los Angeles, CA 90064. *Blank tape.*

**LT Sound**, P.O. Box 338, Stone Mountain, GA 30086. *Signal processors.*

**Ladrigal Laboratories**, P.O. Box 781, Middletown CT 06457. *Compact Disc players.*

**Magnat America**, P.O. Box 808, Marblehead, MA 01945. *Speakers.*

**Magnavox (North American Philips)**, I-40 & Straw Plains Pike, Knoxville, TN 37914. *Compact Disc players.*

**Magnepan**, 1645 9th St., White Bear Lake, MN 55110. *Speakers.*

**Man**, 6301 Riggs Pl., Los Angeles, CA 90045. *Preamplifiers, speakers.*

**Mark Levinson Audio**, P.O. Box 781, Middletown, CT 06457. *Power amplifiers, preamplifiers, signal processors.*

**Martin-Logan**, Box 741, 320 NE Industrial Lane, Lawrence, KS 66044. *Speakers.*

**McIntosh Laboratory**, 2 Chambers St., Binghamton, NY 13903. *Receivers, amplifiers, tuners, speakers, Compact Disc players.*

**Memtek Products**, 2155 S. Bascom Ave., Campbell, CA 95008. *Memorex blank tape, Memorex accessories.*

**Mitek Group (MTX, AAL, Magnum)**, One Mitek Plaza, Winslow, IL 61089. *Speakers.*

**Monster Cable**, 101 Townsend St., San Francisco, CA 94107. *Cartridges, accessories.*

**Motif by Conrad-Johnson**, 1474 Pathfinder Lane, McLean, VA 22101. *Power amplifiers, preamplifiers.*

**M & K (Miller & Kreisel Sound)**, 10391 Jefferson Blvd., Culver City, CA 90230. *Speakers, signal processors.*

**NAD**, 675 Canton St., Norwood, MA 02062. *Receivers, power amplifiers, preamplifiers, integrated amplifiers, tuners,*



turntables, cassette decks, speakers, Compact Disc players.

**Nady Systems**, 1145 65th St., Oakland, CA 94608. *Speakers.*

**Nelson-Reed**, 15810 Blossom Hill Rd., Los Gatos, CA 95030. *Speakers.*

**Niles Audio**, 13824 SW 142nd Ave., Miami, FL 33116. *Accessories.*

**Nitty Gritty**, 4650 Arrow Hwy., F4, Monrovia, CA 91763. *Accessories.*

**Nova Electro-Acoustics**, P.O. Box 25488, Los Angeles, CA 90025. *Power amplifiers, preamplifiers.*

**Novak Loudspeaker**, Merritts Island Rd., Pine Island, NY 10969. *Speakers.*

**Numark Electronics**, 503 Raritan Center, Edison, NJ 08837. *Amplifiers, turntables, accessories, speakers, headphones, signal processors, Compact Disc players.*

**Ohm Acoustics**, 241 Taffe Pl., Brooklyn, NY 11205. *Speakers.*

**Omega Audio Systems**, P.O. Box 119, Leominster, MA 01453. *Speakers.*

**O'Sullivan Industries**, 19th & Gulf Sts., Lamar, MO 64759. *Audio furniture.*

**Parasound**, Wharfside, 680 Beach St., #400, San Francisco, CA 94109. *Receivers, amplifiers, preamplifiers, tuners, turntables, cartridges, cassette decks, speakers, headphones, signal processors, Compact Disc players.*

**Parsec**, 540 Madison Ave., New York, NY 10022. *Antennas.*

**Pentagram**, 207-19 35th Ave., Bayside, NY 11361. *Speakers.*

**Phase Technology**, 6400 Youngerman Circle, Jacksonville, FL 32244. *Speakers.*

**Phoenix Systems**, P.O. Box 1316, Hwy. 99 East, Columbia, TN 38402. *Signal processors.*

**Pickering**, 101 Sunnyside Blvd., Plainview, NY 11803. *Cartridges, accessories, headphones.*

**Polk Audio**, 1915 Annapolis Rd., Baltimore, MD 21230. *Speakers.*

**PS Audio**, 4145 Santa Fe, RD #2, San Luis Obispo, CA 93401. *Power amplifiers, preamplifiers, tuners, accessories.*

**RCA**, 600 N. Sherman Dr., Indianapolis, IN 46201. *Receivers, integrated amplifiers, tuners, turntables, cassette decks, speakers, signal processors, Compact Disc players.*

**Realistic by Radio Shack (Tandy Corp.)**, 1300 One Tandy Center, Fort Worth, TX 76102. *Receivers, turntables, cartridges, cassette decks, speakers, headphones, pocket stereo, signal processors, Compact Disc players.*

**Recoton**, 46-23 Crane St., Long Island City, NY 11101. *Accessories, headphones, signal processors.*

**Rich Acoustic Labs**, 2401 Ross Clark Circle, Dothan, AL 36301. *Speakers.*

**Robertson Audio**, P.O. Box 8449, Van Nuys, CA 91409. *Power amplifiers, preamplifiers, speakers.*

**Russound/FMP**, P.O. Box 2369, Woburn, MA 01888. *Accessories.*

**SAC**, 6844 Vineland Ave., N. Hollywood, CA 91605. *Accessories.*

**SAE**, 1734 Gage Rd., Montebello, CA 90640. *Receivers, power amplifiers, preamplifiers, integrated amplifiers, tuners, cassette decks, signal processors, accessories.*

**Scotch (3M Corp.)**, 3M Center, St. Paul, MN 55101. *Blank tape, accessories.*

**Scott**, 20 Commerce Way, Woburn, MA 01888. *Receivers, integrated amplifiers, tuners, turntables, cassette decks, speakers, Compact Disc players.*

**Sears, Roebuck and Co.**, Sears Tower, 40-15, Chicago, IL 60684. *Cassette decks, Compact Disc players.*

**Shure Brothers**, 222 Hartrey Ave., Evanston, IL 60204. *Cartridges, accessories, signal processors, Compact Disc players.*

**Snell Acoustics**, 143 Essex St., Haverhill, MA 01830. *Speakers.*

**Sonex by Illbruck**, 3800 Washington Ave., N. Minneapolis, MN 55412. *Accessories.*

**Sonrise**, 13622 NE 20th, Ste. F, Bellevue, WA 98005. *Accessories.*

**Sonus by Sonic Research**, 27 Sugar Hollow Rd., Danbury, CT 06810. *Cartridges.*

**Sota Industries**, P.O. Box 7075, Berkeley, CA 94707. *Turntables, accessories.*

**Sound Associates**, N 65 W5730 Columbia, Cedarburg, WI 53012. *Speakers.*

**Sound Concepts**, P.O. Box 135, Brookline, MA 02146. *Signal processors.*

**Soundcraftsmen**, 2200 S. Ritchey, Santa Ana, CA 92705. *Power amplifiers, preamplifiers, tuners, signal processors.*

**Souther Engineering**, 429 York St., Canton, MA 02021. *Tonearms, accessories.*

**Speakerlab**, 735 N. Northlake Way, Seattle, WA 98103. *Speakers.*

**Spectral Audio Associates**, P.O. Box 4475, Mountain View, CA 94042. *Power amplifiers, preamplifiers.*

**Spectrum Loudspeakers**, P.O. Box 2774, Toledo, OH 43606. *Speakers.*

**Spica**, 1601 Paseo de Peralta, Santa Fe, NM 87501. *Speakers.*

**Stanton Magnetics**, Terminal Dr., Plainview, NY 11803. *Cartridges, accessories.*

**Sumo**, 31316 Via Colinas, #103, Westlake Village, CA 91362. *Power amplifiers, preamplifiers, tuners, speakers.*

**Swire Magnetics**, 301 E. Alondra Blvd.,

#1187, Gardena, CA 90248. *Laser brand blank tape, Laser accessories.*

**Switchcraft**, 5555 N. Elston Ave., Chicago, IL 60630. *Accessories.*

**Sylvania (North American Philips)**, I-40 & Straw Plains Pike, P.O. Box 6950, Knoxville, TN 37914. *Compact Disc players.*

**Symdex Audio Systems**, P.O. Box 8037, Boston, MA 02114. *Preamplifiers, accessories, speakers.*

**Synthesis**, 2817M Dorr Ave., Fairfax, VA 22031. *Speakers.*

**Talwar**, 311 West Point Terrace, W. Hartford, CT 06107. *Audio furniture.*

**Tandberg**, Labriola Court, Armonk, NY 10504. *Power amplifiers, preamplifiers, integrated amplifiers, tuners, cassette decks, open-reel tape decks.*

**Terk**, 740 Broadway, New York, NY 10003. *Antennas.*

**Thiel Audio**, 1042 Nandino Blvd., Lexington, KY 40511. *Speakers.*

**3D Acoustics**, 652 Glenbrook Rd., Stamford, CT 06906. *Speakers.*

**Threshold**, 1832 Tribute Rd., Suite E, Sacramento, CA 95815. *Power amplifiers, preamplifiers, signal processors.*

**Triad (Harman America)**, 5000 Brush Hollow Rd., Westbury, NY 11590. *Blank tape.*

**Triad Design**, 1629 E. Deloves Way, Carbondale, CO 81623. *Speakers.*

**Tweek by Sumiko**, P.O. Box 5046, Berkeley, CA 94705. *Accessories.*

**Vandersteen Audio**, 116 West 4th St., Hanford, CA 93230. *Preamplifiers, speakers.*

**Vector Research**, 20600 Nordhoff St., Chatsworth, CA 91311. *Receivers, power amplifiers, integrated amplifiers, tuners, turntables, cassette decks, signal processors, Compact Disc players.*

**Velodyne Acoustics**, 2565 Scott Blvd., Santa Clara, CA 95050. *Speakers.*

**Vibe Acoustics**, 107 Manchester Dr., Staten Island, NY 10312. *Speakers.*

**Visa-International Electronics**, 5601 NW 78th Ave., Miami, FL 33166. *Blank tape.*

**VSP Labs**, 670 Airport Rd., Suite 1, Ann Arbor, MI 48104. *Power amplifiers, preamplifiers.*

**Well-Tempered Lab**, 3108 McKinley Way, Costa Mesa, CA 92626. *Tonearms, turntables.*

**Wilson Audio**, 2 Sinaloa Ct., Novato, CA 94947. *Speakers.*

**Wingate Audio**, 1904 Rustic Rd., Johnson City, TN 37601. *Power amplifiers.*

**Yale Audio**, 2702 Azelee St., Tampa, FL 33609. *Accessories.*

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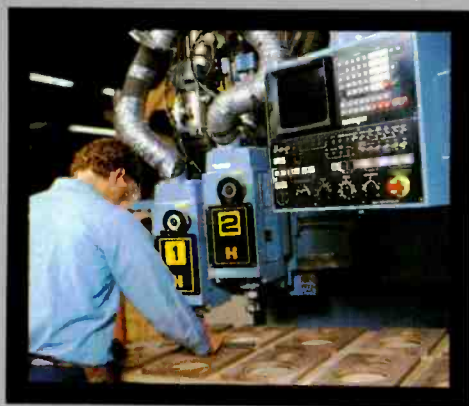
# HARRIS-ATLANTIS LOUDSPEAKERS— OFF AND RUNNING IN MINNESOTA

by John Kitchener

Mike Harris sits behind a desk that looks like it belongs in a picture entitled "The Busy Executive." Along with the souped-up Apple computer, the pile of schematics, and the Wall Street Journal, there is a small battery-operated box called a Decision Maker—push the button and a light comes on next to a 'Yes,' 'No,' or 'Try Again.'

Whether Harris actually uses the box or not is unclear, but there's certainly no shortage of decisions to be made here at Harris-Atlantis Ltd. President of the company at 27, Harris is working like a man possessed, trying to get his new Lolly loudspeakers out into the living rooms of America. He's convinced the speaker will establish the reputation of his fledgling company, here in Burnsville, Minnesota.

Harris began operations in August of 1985, after buying out the Atlantis company, and has been putting in 18 hour days ever since. He doesn't like to waste time. Talking to him, you get the sense a part of his brain is hard at work on other, more pressing matters.



Lollies use solid oak and walnut, ¾" thick.

Till Harris came along, Atlantis had been owned by Team Central, a large electronics store franchise operation. Atlantis built a respectable line of speakers and sold them almost exclusively to Team electronics stores around the Midwest.

After attending the University of Wisconsin, Harris went to work for Team, first as a salesman, then as a store manager, then



Mike Harris: "Our speakers are unique—naturally."

as a buyer working for both Team Central and Atlantis. Unfortunately, Team Central began running into problems. While the individual Team stores have a history of success, and many are still thriving, Team Central went out of business in the summer of 1985. Both Harris and Atlantis suddenly found themselves out of work. When Atlantis came up for sale, Harris seized the day (with a little help from his family and the bank), added his name to the company, and promoted himself to President.

His rapid rise through the ranks at Team, no doubt a result of his perpetual hustle, had actually taken Harris in a new direction; his original interest was in engineering and music. In fact, he was something of a *wunderkind* in the electronics department.

"I was the kind of kid that took everything apart," he says. Judging from the half pieces of disk drives, circuit boards, and crossover networks strewn around the room, it appears to be an ongoing hobby. "I was into stereos, computers, repairing TV's, president of the high

school radio club, that sort of thing." Somewhere along the line, he also found time to become a first degree black belt in Tae Kwon Do.

While playing in a band in college, he began experimenting with speaker design. Soon, the phone calls started coming in, asking if his custom-made speakers were for sale. Never one to pass up a good thing, Harris turned into Harris Acoustics and started building speakers for friends, musicians, and sound studios around the state.

The phone is ringing now, too, and no one is answering it. Harris looks at the phone with a pained expression, and finally picks it up. Everyone at Harris-Atlantis is busy these days. One of the first things Harris did when he took over the company was hire managers who, as he puts it, could manage themselves. Coincidentally, Harris adds, "They just happened to be my brothers." That put 25-year-old brother Steve in charge of Sales and Marketing. Brad, 22, became operations manager. They all spend so much time together, and understand each



other so well, that they've developed their own private language. Being in a room with the three at once is like being in a foreign country where everyone has ESP.

Now Harris is off the phone and he wants to talk about his favorite topic: loudspeakers. "When I took over from Atlantis, I went through the schematics of the speakers they were building, the Award line, and I brought them up to date. I couldn't resist throwing in a few of my own ideas," he adds with a smile. The new speaker, the Lolly, gave Harris the chance to start from a fresh design. It contains many of the innovations he developed in his earlier work.

Harris is the first to admit, however, that there's a big difference between building a good speaker and building a good speaker company. The experience he gained at Team, learning about marketing, distribution, and sales, has been at least as important as his technical know-how. It's given him a feel for what people are looking for. "The average public isn't average anymore," he says. "People are becoming very educated as to what they



**The Award Line: 1240d, 1030d, 820d.**

want to listen to, and how they want to listen to it. They want more quality, but it still has to be worth the money they're spending."

According to Harris, the rock'n'rollers of the '60s and '70s who wanted a big boom box that makes all kinds of noise have now grown up. What they're looking for now is a more natural sound. This led Harris to his new design.

"What we've tried to do is perceive

each frequency as a separate speaker, then develop the frequencies that will respond as naturally as possible."

In keeping with the natural philosophy, Harris is building Lolly cabinets out of solid oak and walnut, three quarters of an inch thick. "It's something no other company is doing," Harris explains. "Solid wood has a natural resonance that helps achieve the sound we're after. And cosmetically, hardwood has a rich, solid look and feel that can't be imitated. For all of that, though, they're still not spendy."

Ultimately, of course, the sound is the thing, so we go into the listening area where a pair of oak Lollys have been hooked up. Harris turns on the Macintosh amp and the CD player. "What do you want to listen to? We've got everything." His two brothers drop what they're doing and join us for the demonstration. They stand around like proud parents, waiting to hear baby's first words.

The music, a little Presto from the Bach-Busters CD, comes through with a stunning clarity that does indeed sound natural. What's unnatural is the position of the Lolly drivers—the woofer is on top of the tweeter.

"Actually, it's the other way around," Harris explains, over the music. "We put the tweeters *below* the woofers, then focus them up into the woofer so the highs blend more naturally with the lows. It gives better imaging and dispersion. The highs don't get lost up in the air, and it keeps the bass from reflecting off the ground—it comes right out at you. Sound studios flip their monitors over all the time for the same reason."

To further achieve the natural sound, Harris chose to go with textile domes for his tweeters, rather than a polycarbonate or metal. Textile responds more softly to the higher frequencies. For the same reason, he avoided a ferro-fluid cooled tweeter. Harris thought they sounded a little too harsh, a little too raspy for his taste.

So what's next for Harris? A guy who's come this far this fast isn't likely to run



**Workbench and craftsman in ad campaign will portray Lolly as fine musical instrument.**

short of plans. "Well, two larger speakers will follow the Lolly in the new Atlantean line," he says. "Then we'll build the Oracle line of professional monitors." And after that?

Harris looks at the ceiling and ponders for a moment. "I suppose it would be nice to have a hundred million dollar company, but I don't think it would be too practical at this time, the way we build everything by hand. Right now I'd settle for a couple more staff so I wouldn't have to work so hard."

Speaking of which, he dons a rare jacket and tie and heads for the door. Where to now? Off to a bank meeting? An advertising pow-wow?

"No, my daughter's getting baptized this weekend and I'm running late."

"You're married?"

"Sure, I have a wife and two kids." And with that he's out the door. It's nice to see that life isn't all work and no play for Mike Harris.

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*Peter W. Stroh*



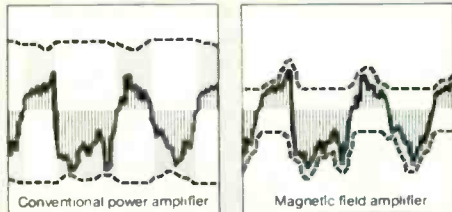
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# MOBILE MUSICALITY.

**THE CARVER CAR AMPLIFIER** introduces Magnetic Field Amplifier technology to automotive high fidelity. Finally, the traditional weak link between car stereo decks and modern speaker design has been replaced with Carver technology. Into 1/10th of a cubic foot, Bob Carver has engineered a complete 120 watts RMS per channel amplification system with the fidelity, accuracy and musicality demanded by the most critical reviewers and audiophiles.

**ESSENTIAL POWER.** Even before the exciting advent of car Compact Disc players, an abundance of power has been necessary to reproduce, without distortion, the frequency and dynamic range produced by modern decks.

Unfortunately, conventional amplifier technology is particularly unsuited to delivering this needed power to the specialized car interior environment. Like their home stereo counterparts, traditional car designs produce a constant high voltage level at all times, irrespective of the demands of the ever-changing audio signal — even those times when there is no audio signal at all! Because automotive amplifiers must, obviously, derive their power from the host vehicle, such an approach results in substantial drain to delicately balanced automobile electrical systems.



Solid line: audio output signal. Broken line: power supply voltage. Shaded area: wasted power. Vertical lines: power to speakers.

The Carver Magnetic Field Car Amplifier is signal responsive. Highly efficient, it produces only the exact amount of power needed to deliver each musical impulse with complete accuracy and fidelity. Thus the Carver Car Amplifier not only reduces overall long-term power demands, but produces the large amount of power necessary for reproduction of music at realistic listening levels without the need for oversize power supply components. Important considerations in the minuscule spaces which quality car design allocates to add-on electronics.

**INTELLIGENT POWER.** A hallmark of all Carver amplifiers is the careful integration of sophisticated speaker and amplifier protection circuitry. The Carver Car Amplifier is no exception.

Speakers are protected with a DC offset internal fault protection design which turns off the power supply at first hint of overload. An overcurrent detector mutes audio within microseconds of a short circuit, as does an output short circuit monitoring circuit. Together, these three circuits eliminate the potential need to replace fuses, revisit your autosound installer, or worse yet, replace expensive speakers due to a moment's indiscretion with your deck's volume control.

**ASSIGNABLE POWER.** Integrated bi-amplification and bridging circuits, along with The Carver Car Amplifier's compact configuration make it ideal for multiple-amplifier installations.

The built-in 18dB/octave electronic crossover allows use of two amplifiers in a pure bi-amplification mode without addition of extra electronics. Or, at the touch of a button, one Carver Car Amplifier can become a mono amplifier for subwoofers while the other Carver Amplifier handles full range. Or, for astonishing dynamic and frequency response, two Carver Car Amplifiers may be operated in mono mode into 8 ohms for a 240 watt per channel car system which will truly do justice to digital without taxing your car's electrical generation system.

**INNOVATIVE POWER.** Can 1/10th of a cubic foot of space hold yet more innovations? Yes.

Carver has addressed the ongoing problem of head-end/power amplifier level matching: Output of current car decks varies widely from brand to brand and model to model. The result can be a less than perfect match. The Carver Car Amplifier incorporates circuitry which compensates for variations in head-end output, reducing noise and optimizing signal-to-noise ratio. In addition, Carver has added a subsonic

filter which removes inaudible power-robbing infrasonics before they can tax the amplifier and speakers. Finally, a delayed turn-on circuit activates the Carver Car Amplifier after your head-end unit has powered up, to eliminate starting pops and thumps.

**ACCURATE POWER.** It goes almost without saying that a product Bob Carver designs for the road carries the same superb electronic specifications that his home audio products are known for.

The Carver Car Amplifier is flat from 20Hz to 20kHz, down -3dB at 16Hz and 30kHz. Not coincidentally, the usual specifications given for Compact Discs. A signal-to-noise ratio of over 100dB means that, in even the most quiet luxury sedan, you will never be annoyed by hiss. The other specifications are equally as impeccable. You may peruse them in our literature or in independent reviews soon to appear.

**ACQUIRABLE POWER.** The remarkable Carver Car Amplifier is currently available for audition at Carver dealers across the country.

It is worth the journey. Whether you have a car system in need of the sonic excitement possible with abundant power, or are in search of the perfect complement to a new high-performance automobile, you owe it to yourself to experience the logical extension of Carver technology — The Carver Car Amplifier M-240.

Power Output Stereo Mode: (continuous RMS power output per channel, both channels driven, at 13.8 VDC input) 120 W into 4 ohms, 20 Hz to 20 kHz with no more than 0.15% THD.

Power Output Bridged Mono Mode: (Referenced to 13.8 VDC input) 240 W into 8 ohms, 20 Hz to 20kHz with no more than .15% THD.

Input Sensitivity: Variable 250mV to 4V

Signal to Noise Ratio: (Referenced to 120 W, A weighted into 4 ohms) Greater than 100 db

Crossover: 115 Hz, 18 dB/octave

Weight: 4.7 lb.

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*The Carver Car Amplifier*



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# LIGHT YEARS CLOSER TO REALITY.

## SONIC HOLOGRAPHY TRANSFORMS EXCITING NEW PROGRAM SOURCES AS WELL AS FAMILIAR OLD ONES INTO TRULY LIFELIKE EXPERIENCES.

When Bob Carver set out to redefine the stereo listening experience through Sonic Holography, he was really rebelling against the limitations of the stereo phonograph record. At the time his remarkable invention first started astounding audio critics and music lovers, vinyl discs were the musical standard.

If Sonic Holography can breathe life into even your oldest records, imagine what it will do for CD's, VHS Hi-Fi and other exciting new stereo sources.

Now there are at least five major audio/video breakthroughs which further expand Sonic Holography's potential to bring more excitement and realism into your life.

These innovations include the Compact Audio Disc, noise-free stereo FM, AM Stereo, Stereo television broadcasts and stereo Hi-Fi video formats.

Each provides the Sonic Hologram Generator in selected Carver preamplifiers and receivers with a chance to redefine the width, breadth and depth of the traditional stereo sound field — while using your existing speakers.

### WHAT SONIC HOLOGRAPHY DOES.

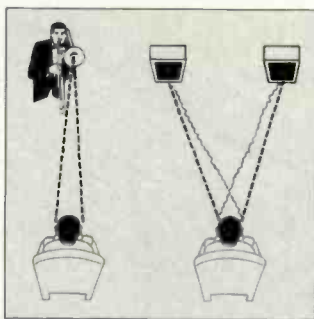
Watch a 13" black and white TV. Now see a movie in 70 millimeter.

Listen to your favorite musicians on a transistor radio. Now sit three rows back from the stage at a live concert.

These are not exaggerations of how much more dimensional and realistic Sonic Holography is than conventional stereo. The most experienced and knowledgeable experts in the audio industry have concurred. Julian Hirsch wrote in *Stereo Review*. "The effect strains credibility—had I not experienced it, I probably would not believe it." *High Fidelity* magazine noted that "... it seems to open a curtain and reveal a deployment of musical forces extending behind, between and beyond the speakers." According to Larry Klein of *Stereo Review*, "It brings the listener substantially closer to that elusive sonic illusion of being in the presence of a live performance."

### HOW SONIC HOLOGRAPHY WORKS.

When a musician plays a note, the sound occurrence arrives separately at your left and right ears. Your brain analyzes the difference in these sound arrivals and tells you exactly where the sound is.



L. Real-life sonic event results in two sound arrivals: one at your left ear, one at your right ear.

R. Stereo playback of that sonic event results in four sound arrivals. Two per speaker per ear = four.

Conventional stereo tries to duplicate this process by using two speakers to send a different version of the same sound occurrence to each ear. In theory, this should "trick" your brain's psychoacoustic center into placing the musician on a limited sound stage between your speakers. If—and only if—each speaker can be only heard by one ear.



Conventional stereo: The sound is heard, more or less, on a flat curtain of sound between the two speakers. Volume differences only. The timing cues are gone.



Sonic Holography: With SONIC HOLOGRAPHY, the sound is reproduced much like that of a concert performance, complete with timing, phase and amplitude cues. Three dimensional!

The problem is, these different versions of the same sound also cross in the middle of your listening room, so left and right ears get both left and right sound arrivals a split second apart. Stereo imaging and separation are reduced because both speakers are heard by both ears, confusing your spatial perception.

The Sonic Hologram Generator in the Carver 4000t, C-9, C-1 and Carver Receiver 2000



solve this muddling of sound arrivals by actually creating another "sound." This special impulse cancels the objectionable second sound arrival, leaving only the original sound from each loudspeaker.

The result is a vast sound field extending not only wider than your speakers, but higher than your speakers as well. Sounds will occasionally even seem to come from behind you! It is as if a dense fog has lifted and you suddenly find yourself in the midst of the musical experience. Or, as the Senior Editor of a major electronics magazine put it, "When the lights were turned out, we could almost have sworn we were in the presence of a live orchestra."

### CARVER CD AND TUNER INNOVATIONS EXTEND THE POSSIBILITIES.

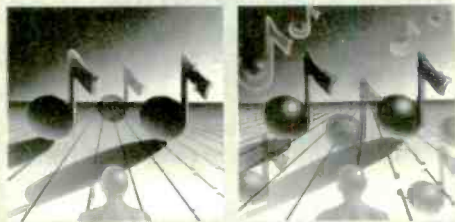
Any stereo source can be transformed from monochromatic flatness into vibrant three-dimensional reality with Sonic Holography.

Compact discs afford vastly increased dynamics, frequency response and freedom from background noise. Yet their potential is trapped in the 2-dimensionality of conventional stereo. Sonic Holography can surround you with the drama and impact of digital. (And the Carver Compact Disc Player with Digital Time Lens sound correction circuitry can enhance your listening experience even further).

Thanks to the Carver Asymmetrical Charge-Coupled FM Stereo Detector, FM stereo broadcasts can be received with vastly increased fidelity. Hiss and interference-free, any signal, from chamber music to live rock concerts,

can take on an astonishing presence and dimension through Sonic Holography.

The new Carver TX-11a AM/FM tuner delivers AM stereo broadcasts with the same dynamics and fidelity as FM. A perfect source for the Sonic Hologram Generator. Think of it: AM can actually become a three-dimensional phenomenon through Carver Technology!



### SONIC HOLOGRAPHY PUTS YOU INSIDE THE VIDEO EXPERIENCE.

More and more people are discovering what theaters discovered some time ago: Audio makes a huge contribution to the realism of video. Still, it has taken the incredible, near-digital quality of VHS and Beta Hi-Fi to make the marriage of audio and video truly rewarding. Now even rental movies fairly explode with wide frequency range, dynamic impact and conventional stereo imaging.

Add the steady emergence of stereo TV broadcasts by all three major networks of prime time programming and special broadcasts, and you have fertile ground for the added realism that only Sonic Holography can deliver.

Unlike so-called "surround sound" a Sonic Hologram Generator puts you into the middle of any stereo soundtrack. (stereo, Hi-Fi stereo, broadcast stereo or even simulcasts). It psychoacoustically expands the visual experience with life-like sound that envelops you in the action.

Once you've heard Sonic Holography with a good video tape or LaserDisc, you'll never go back to mere stereo again.

### ENHANCE YOUR SPACIAL AWARENESS WITH FOUR CARVER COMPONENTS.

The patented Carver Sonic Hologram generator circuit is available on two preamplifiers, our largest receiver and as an add-on component. Each can transcend the limits of your listening (and viewing) room. Each can add the breathtaking, spine-tingling excitement that comes from being transported directly into the midst of the musical experience.

Before you purchase any component, consider just how much more Carver can enrich your audio and video enjoyment. And then visit your nearest Carver dealer soon.



The Carver Sonic Holography quartet. Pictured from left to right is the 4000i Preamplifier, the C-9 sonic Hologram Generator, the Receiver 2000 with remote control and the C-1 Preamplifier.

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# DYNAMIC IMPACT.

## IT'S WHAT THE "POWER/TIME ENVELOPE" IS ABOUT.

Live music has a satisfying dynamic impact that goes beyond mere loudness. It's the feeling of the sound-pressure waves on your skin, the musical beat resonating throughout your body, the sense that the music has power to fill the vast space of a concert hall. It's that same open, unstressed quality that you hear when an amplifier has the power reserves which enable it to reproduce every nuance of any sound without straining the limits of its capacity.

You need power to reproduce the dynamic impact in today's digital recordings. If an amplifier has 2 or 3 dB of dynamic headroom, it can produce up to twice its continuous rated power in short bursts (transients). But if that extra dynamic power is available only for the 0.02 second period (20 milliseconds) of the IHF headroom test, it may not be enough to restore the dynamic impact of live music. The bursts of power in music last far longer than 20 milliseconds. They last for *hundreds* of milliseconds, as these oscilloscope screens show (Fig. 1, 2 and 3).

These figures show actual power/time envelopes of several two-second segments of music. As you can see, musical sound involves large bursts of power, often several hundred milliseconds in length.

The key to dynamic impact is both *power and time*—high power reserves that are available for the full length of time required by the dynamics of the music.

**At NAD, we design amplifiers for music.** NAD's amplifiers have always been designed, first and foremost, to reproduce the dynamically varying content

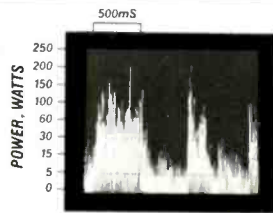


FIGURE 1. BEE GEES, "PARADISE."

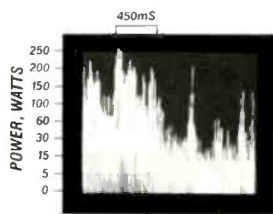


FIGURE 2. CHOPIN, "POLONAISE."

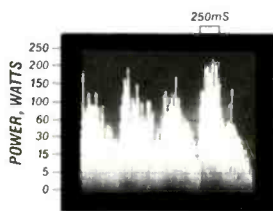
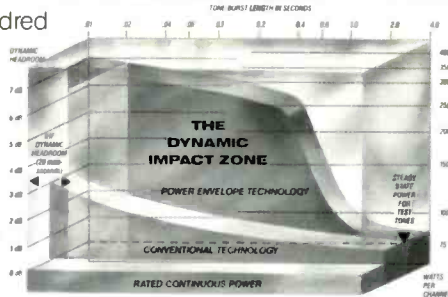


FIGURE 3. BRUCKNER, SYMPHONY NO. 4.

FIG. 4: POWER ENVELOPE TECHNOLOGY VS. CONVENTIONAL TECHNOLOGY.



of music—not just sine-wave test tones. The Power/Time Envelope is a new way to illustrate how any amplifier's performance relates to the needs of music. **Figure 4** shows the power/time envelope of two amplifiers, one using conventional amplifier technology and another using NAD's new Power Envelope design. This graph shows how much power each amplifier can deliver **as a function of time**. Even the best conventional amplifiers have only 2 to 3 dB of dynamic headroom when measured with a 20-millisecond tone burst, and even less for the longer tone-bursts that are common in music.

With Power Envelope technology, NAD's new amplifiers deliver **triple their rated power** (or more), for 25–30 times longer than the brief 20 milliseconds of the IHF headroom test! Power Envelope technology is the difference between having 2 dB of dynamic headroom (as in most of today's amplifiers) and having the full 6 dB of dynamic headroom in NAD's new amplifiers and receivers. Power Envelope technology re-defines the meaning of dynamic power.

Case in point: NAD's new 7175PE stereo receiver, rated at 75 watts per channel continuous power. It is similar in size, weight, and cost to other "75-watt" receivers, but its Power Envelope technology produces over 300 watts per channel of tone-burst power, providing the same dynamic impact as a much larger and much more expensive power amplifier.

Compare, and discover for yourself the surprisingly modest cost and the dynamic impact of NAD's new Power Envelope amplifiers.



THE NEW  
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**ENERGY**

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Or perhaps the more compact ESM-3 will better suit you - it is "definitely an excellent value."

On a student budget? Try the new ESM-4 bookshelf monitor - very affordable!

Audition any of the ESM monitors. We think you'll agree with what *Stereo Review*, *High Fidelity* and *Audio Ideas* say below.



ALL ESM MODELS COME IN MIRROR-IMAGED PAIRS AND ARE AVAILABLE IN EITHER WALNUT GRAIN OR BLACK ASH.

## "AMAZING AT THE PRICE"

"response varied only  $\pm 1.5$  dB from 180 to 18,000 Hz which is unquestionably one of the smoothest responses we have yet encountered from a speaker ... dispersion on a par with response flatness ... phase shift highly linear ... excellent peak power-handling ability ... only at 100 Hz did we manage to reach the speaker's (power handling) limits: with 990 watts (using single cycle bursts followed by 128 cycles of silence) ... smooth midrange and high frequency response, excellent dispersion and group delay, and exceptional short-term power-handling ability ... definitely an excellent value"

*Stereo Review* February 1986, on the ESM-3

"a fine loudspeaker and an excellent value ... very smooth and quite flat, falling within  $\pm 3\frac{1}{2}$  dB on-axis throughout the range above the 50 Hz band ... in the lab's 300 Hz pulse test the ESM-2 accepted without noticeable complaint the full output of the test amplifier ... (470 watts, peak into 8 ohms), for a calculated SPL (Sound Pressure Level) of 114  $\frac{3}{4}$  dB. Loud transients thus should be handled well ... bass sounds more extended than the response curves might suggest, with surprising heft at the very bottom ... Stereo imaging, too is very good ... Even if your budget can accommodate twice the ESM-2's price - you owe it to yourself to audition Energy's latest design."

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

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

*Audio Ideas*, 1985 edition, on the ESM-2

**ESM**  
ENERGY SYSTEM MONITOR

by **ENERGY**



# ADCOM—AN AMERICAN COMPANY THAT MAKES A DIFFERENCE—SEVERAL IN FACT.

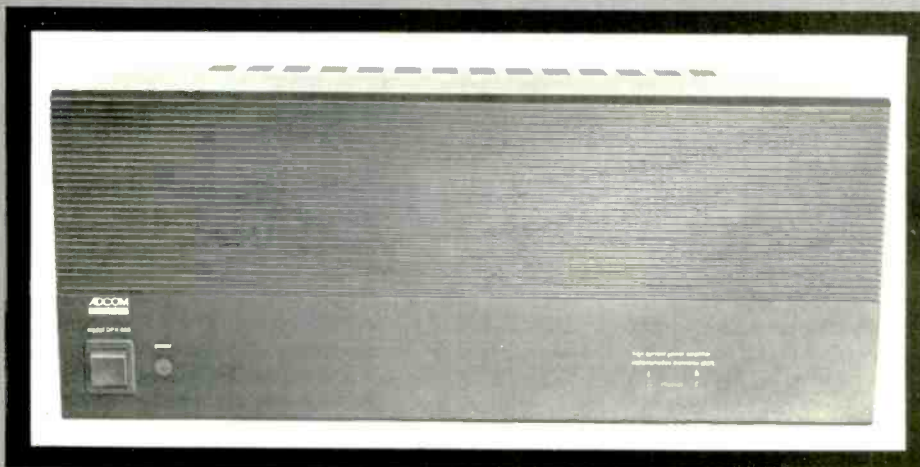
In an industry with hundreds of companies, domestic and foreign, who manufacture scores of products in every category, it's not easy for any one company to stand out.

This is especially true of one company that's relatively small when compared to the Asian giants. However, this company is one of the larger American specialty manufacturers, and thereby enjoys the ability to influence the market. That company is Adcom.

## EMPHASIS ON AMPLIFIERS.

One way Adcom has accomplished its goals has been by being consistently innovative in the type of components it chooses to create. Adcom is primarily a company known for its separate preamps and amplifiers, although its products also include tuners, phono cartridges and recently, CD players.

The company doesn't produce receivers, not even integrated amplifiers. This is consistent with its conviction that high-voltage, high-current power supplies should not be on the same chassis with tuner and preamplifier circuits. That's because amplifier circuits generate heat and hum fields, which interact with the low voltage/low current preamplifier and tuner components.



## HIGH PERFORMANCE, HIGH VALUE.

Adcom intentionally avoids the use of "trick power supplies," gimmicky features and flashing lights—none of which contribute to lasting musical enjoyment—the most important reason for buying any audio product. Although Adcom does not attempt to compete in the astronomical price range of multi-kilobuck components, it has always encouraged direct performance comparisons with the highest priced products on the market.

## EMPHASIS ON MUSICAL WAVE FORMS.

Adcom's amplifiers are perfect examples of this design philosophy, and are based entirely on what is needed to deal with musical waveform rather than with test signals. The circuit diagrams reveal very simple gain paths from input to output, and there's nothing in the way to interfere with the desired end results.

To achieve these results, exceptionally high capacity power supplies and massive power transformers are necessary. Adcom's higher power amplifiers feature toroidal transformers, and their GFA-555 has a complement of 16 high-current output transistors, capable of delivering awesome power into low impedance loads for extended periods—not just milliseconds.

The 200-watt-per-channel GFA-555 and

100-watt-per-channel GFA-545 are their proudest achievements to date. Although their prices were intended to be modest, their sonic performance has been deliberately conceived and designed to be comparable to any of the "esoteric" price-no-object amplifiers.

Extensive comparative listening tests by experienced audiophiles under blind conditions indicated that Adcom's design and performance goals had been achieved.

What's more, these tests were conducted in part with some troublesome speakers whose impedance falls as low as 1 ohm. What this demonstrated was the amplifier's ability to interface easily and accurately with virtually any speaker system available today.

## OUTPERFORMING THE ESOTERICIS.

For example, a test report by Anthony H. Cordesman, in *Stereophile*, a very rational and conservative publication, summed up the GFA-555 in these words:

"... this kind of soundstage has previously cost at least \$2000... it rivals any transistor amplifier in its power class that I have ever heard... at any price.

"It is so clearly superior to past amplifiers in the low-to-mid-priced range—not to mention most amplifiers two to three times its price—that I can unhesitatingly recommend it for even the most demanding high end system."

(Complete reprints of this report are available from Adcom on request.)

Subsequently a new lower-powered version of the GFA-555 was made available—the GFA-545. This new product uses the same highly acclaimed audio circuits and design features of the GFA-555 with few essential differences: lower power, as noted above, and a correspondingly lower price. However, nothing is sacrificed when it comes to its ability to interface with those same troublesome speaker systems.

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Note: All power specifications refer to continuous power, both channels driven into 8 ohms, 20 Hz–20 kHz. 0.09% THD.

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# ANYTHING ELSE IS JUST UN-PROFESSIONAL



From Live Aid to Lincoln Center, top ten artists to top studio producers, JBL has been the #1 choice in professional loudspeakers for more than 40 years. Now the JBL "T" and "TL" series promise to make the star of stage, screen and studio, the star of car audio, too.

Rugged, reliable automotive versions of JBL's professional equipment, the "T" and "TL" series are designed by the same acoustical engineers with the same attention to quality and performance.

"T" series loudspeakers feature high and mid-high frequency transducers made of pure titanium—the same titanium domes that are used in JBL's professional studio monitors. Titanium's high strength-to-weight ratio ensures clear, powerful highs without listener fatigue. And now, for the first time, you can get the benefits of titanium at a lower cost with the "TL" series' titanium laminated domes.

High polymer laminated and mineral filled polypropylene low frequency transducers, in the "T" and "TL" respectively, deliver smooth, uncolored, powerful bass response. They're remarkably resistant to the automobile's acoustically hostile environment. You'll get that smooth JBL response on the bumpiest roads, too. Cast aluminum mountings and die-cast frames resist twisting and buckling, even when mounted on uneven surfaces. Cones and voice coils are tightly aligned for consistently accurate musical reproduction and high power handling. The JBL "T" and "TL" series automotive loudspeakers. Once you've heard the professionals, you won't want anything else.

For more information and your nearest dealer call toll free 1-800-633-2252 Ext 150 or write JBL, 240 Crossways Park West, Woodbury, New York 11797.



Pictured above, left to right are: The T95, T55, T65, and, the TL90C, TL500, TL600.

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### A marriage made in hell.

The sad truth of the matter is that your amp and speakers were never made for each other. No matter how hard manufacturers have tried to match them, their differences have remained irreconcilable.

As in all bad marriages, it's a communication problem. They just don't talk to one another. The amp cannot anticipate requirements of the speaker, nor can the speaker tell the amp what it needs. The result is phase and amplitude distortion not measurable in the indi-

*"For my own personal system, it was the answer to problems that I had been trying to solve with a graphic equalizer. The system has never sounded so good!" - Jim Thomas, MIX Magazine*

And your system will produce sound much closer to true "live" sound than you've ever heard from it or any other system before. Which means you'll be able to increase your enjoyment of everything you listen to through your stereo system—your albums, cassettes, videos, television, radio and even your compact discs—all as they

humble or magnificent. Every application is an improvement. In short, it makes any speaker sound better.

The BBE 2002 also has the virtue of being able to fit into any audio system. It measures only 16" x 7½" x 3". And all you need to make it work is to plug it into a regular wall socket, and plug it into your standard tape loop. Then sit back and get comfortable, because from now on, you're going to be using your system a lot more. And enjoying it more.

### What price glory?

\$250.

We believe in the BBE 2002 so strongly that we're

# Revolutionize your sound system in one stroke.

vidual components. So whether you're listening to Mozart or Twisted Sister, something is always lost in the translation.

What your amp and speakers need to live in harmony is something that understands them.

### Not just another black box.

Though the BBE™ 2002 may make some pretty familiar promises, it goes about fulfilling them in a very different way.

Everyone wants their sound as close to "live" as possible. At Barcus Berry Electronics, Inc. we're no different. We consider ourselves very knowledgeable in the area of live sound since we've been making the world's most popular musical instrument transducer microphones for the past 20 years.

But over the past 10 years, we've also been perfecting a brand new technology that will finally let you get as close to true "live" sound as man-made components will allow.

So, ten years and 42 patent claims applied for and granted later, we've come up with something close to a miracle. We call it the BBE 2002.

The BBE 2002 has a "brain" that knows how speakers work. It continually compares the original sound program or signal

*"Everything we heard from it sounded good, and it had no discernable flaws. Not too many products we test can justify the same conclusion."*

- Julian Hirsch, Stereo Review

with the likely output at the speakers—all the while anticipating the myriad problems caused by the inherent imperfections of the speaker/amp interface.

### A true musical genius.

The BBE 2002 is not only smart, it's fast. It corrects the signal, as needed, more than 50,000 times a second.

The results are dramatic to say the least. Some say they're revolutionary. The highs have greater clarity. There's a remarkable increase in presence. Separation is extraordinary. Harshness is diminished so you'll experience less "ear fatigue"

were really meant to be heard.

But be forewarned. It's an extraordinary sensation at first, because you're hearing your sound system deliver better sound than you've ever heard before. It's the best thing this side of live. It's as if



you always listened to your speakers with old army blankets over them and suddenly took them off. And it'll spoil you for anything less.

### Even engineers and producers need BBE.

The BBE 2002 employs the same circuit utilized in our professional model which is being used in recording studios, radio stations, movie theatres and concert halls throughout the world. This professional model has exceeded the expectations of the most demanding engineers, producers and performers.

What the BBE 2002 represents is the solution to the amp/speaker interface problem. Try as they might with the most advanced acoustic technologies, component manufacturers have never been able to make all their equipment work together efficiently.

And the BBE 2002 works wonders with any system you connect it to, however

giving you an iron-clad 30-day, your \$250 back, no questions asked, guarantee. And we'll even give you a full year's warranty on all parts and labor.

### The phone is mightier than the pen.

There are several ways you can fix your sound system. You can call us toll free at 1-800-453-5700. In Utah, 1-800-662-2500. We've got those famous operators standing by 7 days a week, 24 hours a day. Or you can fill out our coupon with the

*"I can't imagine working on another album without BBE."*

- Steve Levine, producer of Culture Club, The Beach Boys, and 1984 BPI Producer of the Year.

writing instrument of your choice and order your BBE 2002. Credit cards, money orders, bank checks, certified checks and wire transfers will be processed immediately. Personal checks require 18 days to clear. And, if you're in a particular hurry and order by credit card, you can get your BBE rushed to you for a small additional charge.

You can also write or call us for a free brochure to learn more about the BBE 2002.



But that will only delay the inevitable. Sooner or later, you're going to have your own BBE 2002. Be the first on your block. You always have been. Haven't you?

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Send me \_\_\_ BBE 2002 unit(s) at \$250 each. (CA residents add applicable tax. U.S. currency only. Additional charge for rush shipping determined by destination. Canadian residents should write for additional information.) (Please allow 4-6 weeks for delivery.)

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CIRCLE NO. 26 ON READER SERVICE CARD

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By removing dirt, dust and film across the surface with an ultrasoft chamois pad, Recoton's true radial cleaning action significantly reduces the causes of distortion and dropouts. The results are pure sound and error-free reading of digitally encoded music information.

And to ensure longer lasting pleasure from your compact discs, ask your dealer about the complete line of Recoton accessories. Like our superb non-corrosive cleaning solution and unique surface restoring scratch filler solution. Plus protective shields for permanent safeguarding of your compact discs.

Before you get into a real scrape with ordinary compact disc cleaners, get the award winning performance of Recoton.



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WHAT YOU NEED TO KNOW ABOUT

# HEADPHONES

HOW TO MAKE AN INFORMED CHOICE FOR GOOD SOUND AND COMFORTABLE LISTENING

BY E. BRAD MEYER

**I**n the past four years there has been an explosion in the headphone market as millions of people have discovered the joys of portable music. But hi-fi headphones have been around for thirty years, and the small, lightweight models meant for use with portable radios and tape players represent only one of several distinct kinds.

A good pair of headphones can have wider frequency response and lower distortion—and can reveal more sonic detail—than loudspeakers costing from ten to a hundred times its price. Although loudspeakers will always have certain sonic advantages, if you're serious about listening to music you should own at least one pair of headphones. Which kind is best for you depends on your tastes and listening habits.

## Circumaural Phones

The first headphones sold for high-fidelity listening were the direct descendants of military hardware used for communication inside airplanes, tanks, and ships where background noise was high. To keep out the noise and improve intelligibility, headphones of this



**K**oss's K/40 LC Plus is a supra-aural headphone that has variable volume-level controls for each ear-piece. Price: \$44.95.

type have cushions that completely surround the ear, forming a tight seal with the side of the head. The back of the headphone shell is solid, creating a closed cavity bounded by the driver element at the outside and the ear drum on the inside.

The sealed-cavity circumaural design has advantages for music listening. The isolation it provides keeps the background noise out while sealing the music in, so that even in a quiet room others nearby can't hear it. Furthermore, it takes relatively little diaphragm movement to generate good low bass inside a small enclosed volume.

But the sealed-cavity design has its drawbacks too. The ear cushions must seal tightly for good bass performance. If the fit is incorrect, or if the listener has long hair or wears glasses, bass response will suffer. The headphones must be clamped to the sides of the head with a fairly strong spring, and the closed plastic shell and cushion are bulky and heavy. The pressure and the weight become bothersome after a while.

While members of the armed forces can be ordered to wear almost anything, most consumers refuse to tolerate the discomfort of

sealed-back models. Accordingly, in most modern circumaural headphones the back of the transducer is open to the outside. The open-backed shell is lighter, and the relatively unimpeded diaphragm gives good bass response without depending on a tight seal—but it also lets the background noise in and the music out.

There is one application where the weight and pressure of sealed-cavity circumaural phones are worth enduring: live recording. Whether you are in the performing space or backstage, only sealed headphones can keep out the live bass frequencies and hall reverberation so that you can evaluate what you're getting on the tape.

#### Open-Air Headphones

It was the portable tuner/cassette player that transformed headphones from a specialty item into a major fad. Portable headphones must be light and comfortable, and unlike units made strictly for home use they must be fairly transparent to external sound. (To isolate the city-dwelling pedestrian, bicycle rider,

or driver from the outside world could prove fatal; in many states wearing headphones while driving is illegal.)

The transducer in an open-air headphone is designed to operate about half an inch away from the outer ear. The correct distance is maintained by a small piece of open-cell plastic foam that sits comfortably on the ear. In contrast to the wide headbands used on circumaural headphones to distribute their weight over a greater area, most portables have narrow springy bands with rubber inserts to keep them from slipping. In some models the band goes under the chin, which is slightly less secure than over the head but also much less visible.

The early open-air headphones that came with portable radios and tape players were distinctly inferior to their larger cousins, suffering from attenuated bass, large frequency-response irregularities in the midrange, and high distortion. The same faults still plague many of the cheaper models, but for those willing to pay a little more there are open-air headphones that rival the best full-size models.

**A**zden's DSR-38 open-air headphones feature samarium-cobalt magnets, large-diameter diaphragms, and aluminum voice coils. Price: \$99.95.



### Supra-Aural Phones

In between the two previous types are supra-aural headphones with soft, nonpermeable cushions that sit directly over the ears. Smaller, lighter, and more comfortable than most circumaural models, supra-aural phones are capable of both good isolation and good bass, but their effectiveness depends strongly on the shape of the individual ear. On protruding or deeply wrinkled ears this design doesn't work as well as it does on smoother ears. The best supra-aural phones are equal to other top designs in midrange and treble performance, but their low bass is both less prominent and less predictable.

### In-the-Ear Phones

The term "headphones" doesn't really apply to some models since they don't touch the *head* anywhere. These button-sized transducers nestle within the entrance to the ear canal; there is no external band. Bass performance of in-the-ear phones is severely compromised, and comfort varies from unaccept-

able to merely adequate, but if you have long hair no one need ever know you're wearing them.

### Electrostatics

Many audiophiles like electrostatic loudspeakers for their wonderful midrange clarity and sweet, airy top end. But electrostatic speakers cost a lot, they are inefficient, their distortion is high at loud levels, and the low-frequency radiation from the rear cancels the sound from the front, rolling off the bass.

All four problems vanish when the electrostatic transducer is adapted for headphone use. A small diaphragm in close proximity to the ear need not move very far to sound loud, so distortion remains low even at high levels, and a small amplifier is adequate. With the ear so close to the transducer, the effect of rearward radiation is negligible. Electrostatic headphones can produce some of the most gorgeously detailed and natural sound available anywhere for a small fraction of the cost of any remotely comparable loudspeakers.

So why shouldn't we all abandon our search for the perfect speaker and buy headphones instead? There

are two reasons. The first has to do with the stereo image. Although headphones give you more detail than loudspeakers, the instruments will seem to be located inside your head, not out in front of you. We derive most of our directional cues from the physical effects of the head and ears on the arriving sound, but headphones inject the sound directly into the entrance to the ear canal, bypassing these mechanisms. A few designers have tried to overcome this by mounting headphone transducers in large frames that position them forward and away from the ears, a partial solution at best.

The second reason concerns bass response. We perceive frequencies below about 50 Hz not just with our ears but with our bodies, especially the soft parts in the abdominal cavity. Headphones can have flat response extending well below the range of most loudspeakers, but the visceral impact is missing. You could, of course, supplement your headphone listening with a very large subwoofer—or with one of those "hi-fi chairs" that have low-frequency transducers mounted in the seat and back cushions.

Compared with other head-



**T**he AKG K 415 (center) is a two-way electret electrostatic/dynamic headphone—no external power supply is needed. Price: \$85.

**T**he Audio-Technica ATH-20 (near left) has a variable damping control that adjusts the bass response to a listener's taste. Price: \$54.95.

**I**t is easy to make very loud sounds with headphones. You can listen all evening at levels that would bring the neighbors down on you in no time if you were using loudspeakers. Away from home the temptation to turn up the volume is even greater. That many people are using portable music systems with headphones instead of speakers is a development for which bus and subway riders everywhere are grateful. But when you are using open-air headphones in a noisy environment, there is a natural tendency to turn up the volume enough to drown out the background noise. Some pretty high—even dangerous—levels can be generated in this fashion, as I proved with a laboratory test.

I wanted to see what levels would be necessary for the music to be audible from a portable system while driving on a highway with the windows open. Rejecting such an actual experiment as hazardous, I chose instead to duplicate some earlier automobile-noise measurements by re-creating the sound field of a car in the lab.

Using a pink-noise generator and some frequency-shaping filters, I was able to reproduce the curve of sound level vs. frequency occurring in a car with the windows open moving at about 50 mph. (Duplicating the prodigious low-frequency levels generated by the turbulent wind took almost all the available power from an amplifier capable of putting out several hundred watts per channel.)

phones, instead of speakers, electrostatics have just two disadvantages. One is cost; they range from about \$100 to almost \$800 a pair, and most are between \$200 and \$400. The other is inefficiency. Electrostatics can require up to a few watts of input, many times the few hundred milliwatts it takes to drive dynamic headphones. This means that you must use a power amplifier with electrostatic phones. The normal headphone output of a preamplifier, receiver, or cassette deck won't do the job. Unless they come with their own power amplifier, electrostatic headphones are usually fed by an adaptor box (which also contains the required high-voltage power supply) connected to the amplifier's normal speaker terminals. A switch on the adaptor box selects either the phones or the loudspeakers.

#### Selecting Headphones

The only way to choose headphones is to go to a store, try some on, and listen. Most hi-fi specialty shops have a rack with a selection of

Standing next to the measurement microphone, I put on some popular music of limited dynamic range and donned a pair of open-back headphones, then turned up the music until I could hear it reasonably clearly. I then turned off the background noise and measured the sound levels at the entrance to the ear canal under the headphones.

The music did not seem particularly loud with the background noise on, and to hear the soft parts clearly I would have had to turn up the gain another 10 dB or so. But against a background of silence it was almost painful. In this difference in perception under the two conditions lies the danger that inattentive headphone users may damage their hearing without some kind of protective device.

Federal laws governing safety in the workplace imply that there is no danger from exposure to sound levels up to 90 dB as measured with a sound-level meter using the standard A-weighting network, which reduces sensitivity to frequencies below 1 kHz and to the highest frequencies. With the microphone inside an earpiece in my experiment, the sound-level meter frequently exceeded 90 dB, and switching to "peak" response yielded readings of over 102 dB. The music was clearly audible through the back of the headphones from several feet away in a quiet room. Even so, it was not nearly as loud as some sound I have heard coming out of headphones. In one case I could understand the

models. Put on a pair of phones, adjusting the headband until they fit as comfortably as possible, and find out which of the nearby receivers you are connected to. With the volume at a moderate level, tune to different stations to hear how the phones sound with different kinds of music. Look for a classical station that uses little signal processing, since the heavy compression and equalization used by most rock stations—signal processing becomes

*The Stax SR-Lambda (Professional) electrostatics and SRM-1/Mk-2 Class A drive unit are considered by many to make up the ultimate headphone system. Price: \$799.95.*



lyrics to a song from several feet away in a jet airliner, clear evidence of hearing damage in progress.

Some manufacturers have responded to this problem with portable tape players, radios, or accessories that either warn you of high sound levels with a flashing LED or prevent them outright by interrupting the music if it gets too loud. These circuits are a good idea, and those producing them deserve praise for their social responsibility. The problem is that headphones differ widely in sensitivity, thus changing the level at which the protection takes place according to how well your headphones match the ones used in designing the protective circuitry. Moreover, manufacturers differ in their definitions of safe levels.

For instance, the Koss Safelite flashes an LED when the sound level exceeds 95 dBA, but the more conservatively rated Ameritech Earsaver adaptor cuts off headphone sound when the level exceeds 85 dBA. The levels I encountered during my experiment fall between these two values, meaning that Safelite-equipped Koss portables would not have warned me while the Earsaver would have prevented me from turning the music up as far as I wanted.

Despite the uncertainties involved, either device can provide valuable calibration for your ears. Once you've been made aware of what 85 or 95 dBA sounds like, you are better prepared to safeguard your hearing with your own hand on the volume control.

much more obvious with headphones—will confuse your judgment.

Try an assortment of stations with several different headphones, noticing how the overall sound changes with size, type, and price. As with loudspeakers, the most expensive model won't always sound the best. Listen especially for peaks in the frequency response; if all musical sources come out having a similar tonal quality, you'll quickly tire of that sound.

Now turn the volume down, switch off the receiver's muting, and tune it between stations. The steady roar you hear contains all audio frequencies and is very revealing both of overall frequency balance and of peaks in the response. The noise should be even in quality, without very much bass, and you should not hear any identifiable musical note within it. If you do, the phones' frequency response has a strong peak.

You can only learn so much from listening to FM. As in testing loud-

*(Continued on page 132)*

# Maxine

## SULLIVAN

AN AMERICAN CLASSIC

Still  
swinging  
after fifty  
years



by Chris  
Albertson

**Y**OU have to come up to the house and hear Maxine," the late stride pianist Cliff Jackson often said to me, but I never made it. That was some twenty-five years ago, and what he wanted me to do was go to the Bronx to hear his wife, Maxine Sullivan, render *Wolverine Blues* on the valve trombone. The thought of the diminutive former Swing Era singing star taking such a robust instrument in hand intrigued me, but when you live in Manhattan the Bronx can seem ever so far away.

The idea of taking up an instrument came to Maxine Sullivan during an engagement in Honolulu

thirty years ago. "They used to have jam sessions there, and I saw this girl play a trumpet, but I knew that this was not an instrument for me, because playing those high notes would probably wipe me out. Then I thought of Billy Eckstine, who sang and played trombone, and I asked Cliff to see if he could find a used one."

Soon thereafter, armed with a \$65 valve trombone, Maxine began to take lessons from Vic Dickenson, one of the greatest jazz trombonists of any era. "I played it in public a few times, but the reviews were not the best," she admits. "I knew all along that I



*Singing better than ever after more than fifty years in show business, Maxine Sullivan is making some of the best vocal recordings around.*

*One she made last year, on the Stash label, featured the songs of Burton Lane, shown with Sullivan above. Earlier this year she played a live date at the Vine Street Bar and Grill in Hollywood (photo on facing page) and appeared on the nationwide Grammy Awards telecast. She doesn't look or sound her age today, and she didn't look like a sixty-year-old when the photo below was taken a few years after she came out of semiretirement.*



wasn't meant to be a great musician, but I just wanted to have some fun, and I did." That was 1956, and the following year Maxine retired from show business. She finished raising her daughter, Paula, studied "some light nursing," and turned the remainder of her attention to community affairs, climbing to the chairman's seat of her local school board. For a while she also continued to play the trombone, but only as a diversion.

Now that is all water under the bridge. Maxine became a widow sixteen years ago, Paula is a practicing nurse, and the trombone has long been a dust-gathering relic. "I had to give it up," she explains with a giggle, "because the longer I played it, the bigger it seemed to become." Now it is Maxine Sullivan who is getting bigger, not in size but in stature as a singer. Singing was always what she did best, and now—as the seventy-five-year-old veteran celebrates her fiftieth year in show business—she is doing it even better.

**M**S. Sullivan is not shy about her age, and she is quick to point out that fifty years is a conservative figure, which relates back to a time when she began to attract attention singing to piano accompaniment at a Pittsburgh establishment with a most misleading name: the Benjamin Harrison Literary Club. "I had been singing long before 1936," she says, recalling early jobs with her uncle's band, the Red Hot Peppers, "and I

have actually been celebrating for the past three years, but just getting up and singing doesn't put you in show business, so I knocked a few years off. Fifty is a nice round figure, don't you think?"

Having flourished during Prohibition, the Benjamin Harrison Literary Club was an after-hours gathering place for fun-loving Pittsburghers. It was a place where they could mingle with musicians and touring performers. "I worked in the back room on the second floor, which only had eight tables," Sullivan recalls, "and all the great musicians, black and white, came there to unwind after a night of hard work in the clubs."

In 1934, members of the Chick Webb band breezed through there and gave the young singer their autographs. Maxine—who was then called Marietta Williams—was eventually to marry two of the men whose signatures she collected that night, Cliff Jackson and bassist John Kirby.

"Musicians from New York used to encourage me to go there, so I finally did," she says. The successful persuader was Gladys Mosier, pianist of Ina Ray Hutton's popular all-girl band, but Maxine did not just pack up and leave Pittsburgh for good. She decided to test the waters first by taking a Sunday excursion to the Big Apple, as musicians were already calling New York. "I didn't have any plan, but it so happened that Ina Ray Hutton's band was at the Paramount,

so I looked up Gladys Mosier, who talked me into staying.”

Later that week, Ms. Mosier introduced Maxine to Claude Thornhill, an arranger and budding bandleader who apparently recognized her potential and took her on a trek through Swing Street, a block of West 52nd Street between Fifth and Sixth Avenues that was strewn with hot spots featuring the greatest Swing Era musicians and bands. “They took me up and down the street, stopping in just about every club for an audition,” she recalls. It was guitarist Carl Kress who finally hired her to sing at the Onyx Club with a group led by John Kirby.

**H**AVING secured a job for her, Thornhill began guiding her career with the skill of a professional image maker. First he advised her to change her name to avoid being confused with Midge Williams, a popular vocalist of the day. Having given her an Irish-sounding name, Maxine Sullivan, Thornhill launched her recording career by featuring her on two of his own debut sides. Then he wrote for her an airy swing arrangement of a Scottish folk song with which she would forever remain identified. *Loch Lomond*, recorded for Vocalion in 1937, became an enormous hit and put the young singer from Pittsburgh on a high road along which she still travels.

Said to have been requested as many as thirty times in one night, *Loch Lomond* also caused some controversy. “Some people thought it was sacrilege to swing a song like that,” she recalls. “I sang it on a show called *Saturday Night Swing Club*, which was a radio hookup from New York, and the manager of the Detroit station cut us off the air as soon as he heard what I was singing. But I guess more people liked it.” Indeed they did. The charm of this cultural blend struck the fancy of people throughout the world, even when she performed it at Loch Lomond itself.

John Kirby’s pickup band soon took on the shape that would forever assure it a sizable niche in jazz history, and by 1938 Maxine had become his wife as well as his vocalist. As the Thirties drew to a close, the Kirbys both rose to fame, but Maxine was clearly the more popular. When she decided to seek a separate career, their marriage began to falter, leading to

a divorce in 1944. Toward the end of their marriage, the Kirbys continued to perform together, and they could be heard each Sunday on their own CBS radio show, *Flow Gently, Sweet Afton*.

“We both had a good thing going with that traditional material,” she recalls, alluding to the fact that Kirby made a specialty of swinging the classics, “because the ASCAP ban was on and the stuff we did was in the public domain. Still, I must admit that I got tired of being called the ‘Loch Lomond Lady’ and having to sing that song and things like *If I Had a Ribbon Bow* and *Barbara Allen* all the time. I was doing a lot of vaudeville in those days, and there you only get to sing three or four songs, so you really long to do something different, but 99 percent of the people knew me as ‘the lady who sings *Loch Lomond*,’ and I guess that hasn’t changed.”

Perhaps not, but today more and more people are discovering and rediscovering the Loch Lomond Lady, and what they are hearing is a smooth, wonderfully mature ballad singer whose scope runs way beyond the folk fringe. In 1967, after ten years of semiretirement, Maxine Sullivan let clarinetist Tommy Gwaltney talk her into appearing at his Washington, D.C. club, Blues Alley. “That got me back into the business, little by little,” she says, “and it seems like things have picked up lately.”

Today’s new and improved Maxine Sullivan has a series of wonderful albums on the Concord, Stash, and Audiophile labels. Not only do these recent recordings belie her age, they are simply among the best vocal albums made by anyone in recent years. If I may be allowed to quote from a liner note I recently had the privilege to write, “Her smooth, perfectly timed delivery reflects years of experience and there is no hint of that hesitancy one so often detects in singers who try to recapture what once was theirs. Maxine is not recapturing, but rather delivering the essence of an artistry that obviously first now is reaching its peak.”

Had she wanted to get back into the business? I asked. “No, not particularly, but I guess I’ll keep going until I drop.” And to what does she attribute the fact that she sounds at least forty years younger than her chronological age? “I had a good rest.” □



## A SELECTIVE DISCOGRAPHY

**Good Morning, Life!**  
With Loonis McGlohon  
(piano). Recorded in  
1983. AUDIOPHILE  
AP-193.

**The Great Songs from the  
Cotton Club by Harold  
Arlen and Ted Koehler.**  
With the Keith Ingham  
Quintet. Recorded in  
1984. STASH ST-244. “A  
gem. Great songs elevated  
to new heights” (February  
1986).

**Maxine.** With Ted  
Easton’s Jazz Band.  
Recorded in 1975.  
AUDIOPHILE AP-167.  
“Her voice, her swinging  
vitality, and her matchless  
phrasing are still among  
the wonders of the jazz  
world” (December 1983).

**Maxine Sullivan Sings the  
Music of Burton Lane.**  
With Keith Ingham  
(piano). Recorded in  
1985. STASH ST-257.

**Maxine Sullivan with the  
Ike Isaacs Quartet.**  
Recorded in 1979.  
AUDIOPHILE AP-154.  
“Singing golden-age  
standards in her  
inimitable voice and  
uniquely relaxed, glowing  
style” (November 1982).

**Uptown.** With the Scott  
Hamilton Quintet.  
Recorded in 1985.  
CONCORD JAZZ CJ-288.

**We Just Couldn’t Say  
Goodbye.** Recorded in  
1979. AUDIOPHILE  
AP-128. “Like reading  
ripe Colette” (November  
1979).

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At Home With The

# GENERAL ELECTRIC CONTROL CENTRAL



by Chris Albertson

As the sophistication of audio and video technology increases and the prices decrease, more and more of us are finding our homes filled with little buttons to push. I recently counted over three hundred control buttons in my apartment—not to mention about a hundred LED's (light-emitting diodes)—and that does not include the total of five hundred keys on my computers. The distinction between buttons and keys is vague, so let us just say that I have close to a thousand little "activators" in my relatively small apartment. Of these, about one hundred reside on five hand-held remote-control units; there is one for the television set in my living room, one for the videodisc player, another for the TV Cable box in my bedroom, and one for each of my two VCR's. Each remote controls its respective component by transmitting infrared signals in its own code, so each one works only with the component for which it was designed. The result is a coffee table cluttered with calculator-like devices.

RCA solved the problem of multiple remotes in a limited fashion with its Digital Command System, but the integrated control unit is rather large and works only with

RCA components. But what about the majority of us, the consumers whose loyalty does not lie with a single manufacturer? General Electric apparently had us in mind when its engineers designed the Control Central.

The GE Control Central (Model RRC600, \$149.95) is a programmable remote system that measures about 3 x 8 x 3/4 inches, weighs just over half a pound, and is capable of "learning" the functions of four different, mutually incompatible infrared remote units. Not only can its thirty-six buttons be programmed to duplicate virtually any function of up to four component-specific remote controls, but it can also outperform the units it emulates. You don't have to point it right at the component you want to activate, either. The Control Central transmits a broader, more powerful signal than any of the remote units I had been using, and it even enabled me to operate my VCR from around a corner. That required a little bit of searching for the right spot, but it would have been impossible with the VCR's own remote control.

The learning process is simple. You flip a switch on the Control Central's side to LEARN, and step-by-step instructions appear in the

LCD (liquid-crystal display) window. Following the flashing directions, you use the SOURCE key to select the type of control unit you want the Control Central to emulate (TV, VCR, cable, or auxiliary), then align the two control units head to head and 2 to 5 inches apart. To "teach" a function code to the Control Central, you press a key on the old unit and then press the matching key on the Control Central.

To program the Control Central for my Quasar VH5846XE videocassette recorder, for example, I set its source to VCR and placed it facing the Quasar's remote control. The display window flashed, READY/PRESS MATCHING KEYS, so I simultaneously pressed the POWER key on each unit until the word RELEASE was flashed, followed by DO AGAIN. Repeating the procedure produced the message FUNCTION LEARNED, and I moved on to the other keys, one by one.

To keep the number of keys on the Control Central manageable, only frequently used functions were assigned corresponding keys. Additional functions are selected from options displayed in the window. In the VCR mode, these additional functions number twenty-five and include many that are found only on the most advanced models (my

Quasar required just a few of them). The GE unit is designed to display only the functions that have been learned.

It is hard to imagine a function that this neat little remote control cannot handle. Among its thirty-two additional TV functions are such rare commands as PHONE, HELP, SOUND +, BILING(ual), ZOOM, ANT(enna), AUT(omatic) DIAL, and RADIO. Similarly, the twenty-seven auxiliary functions include RANDOM ACC(ess), INDEX, RUBOUT, CHPSRCH (chapter search), DISC, BALANCE, and H(ome) MINDER. The auxiliary source is, of course, the one to select for remote-controlled Compact Disc and videodisc players.

Not surprisingly, the Control Central is preprogrammed to handle most GE components, and there is even a PROG/LOCK switch for programming (adding and deleting) TV channels by remote control. When you enter your own commands you override the preprogrammed GE commands, but they remain in permanent memory, so pressing the RESET button (securely tucked away in the battery compartment) will always bring them back.

I mentioned at the beginning that I have five remote-controlled components, but the GE unit is designed to emulate only four at a time. In some cases, it is possible to combine two sets of component commands under a single source selection, though it requires more memory and could result in an OVERLOAD message. But I successfully combined my Jerrold cable-box commands with the most common functions of my Magnavox VR8345 videocassette recorder.

As you may have gathered, I am impressed with the performance of the GE Control Central. It is powered by four AAA alkaline batteries and also features a LOW BATTERY indicator (which you will see every six months to a year), automatic shut-off, and a nonvolatile memory (which means that you can change the batteries without having to reprogram). Accompanied by a well-designed, easy-to-follow instruction booklet, the GE Control Central is a cinch to master, and it is as attractive as it is functional. □

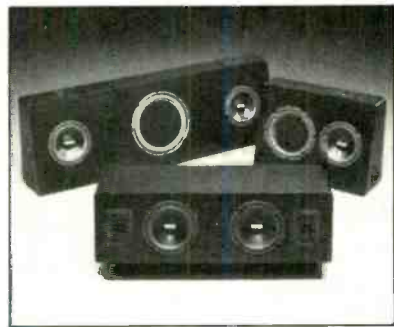
For more information on the General Electric Control Central, see a General Electric dealer or write to General Electric Company, Dept. SR, Consumer Electronics Business Operations, Portsmouth, VA 23705.

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## ROSSINI'S WITTY "JOURNEY TO RHEIMS"

**R**OSSINI'S *The Journey to Rheims*, or *The Hotel Golden Lily*, was written in 1825 as a *pièce d'occasion* celebrating the coronation of Charles X of France. It might have turned out a pompous bore (such confections frequently are); instead, in its first recording, by Deutsche Grammophon, it proves to be an ingenious and very funny comedy, bubbling with high spirits and overflowing with musical invention.

The plot, such as there is, concerns nine travelers from different countries and walks of life who stop at an inn en route to Rheims to witness the king's coronation. The mistress of the inn is unable to procure horses; her guests cannot proceed, so instead they order a fine dinner preparatory to going the following day to Paris, where the celebrations promise to be even more enticing than those at Rheims.

The whole "action" of the opera lies in the intriguing interplay of the ten personalities: an improvising poetess, an amorous widow, a fashion-mad Parisienne, a French dandy, a jealous Russian officer, a serious-minded English lord, an antiquary pedant, a German music lover, a Spanish gaudée, and their hostess, a Tyrolean inn keeper. Muddled love affairs and other doings work out happily before the final curtain, and in the meantime we smile at the characters' foibles and delight in their happiness.

The lively libretto was merely Rossini's point of departure for what surely must be the wittiest of his scores. Parodies of current musical styles, spoofs of national musical idioms, and musical characterizations of the varied personalities lend special fascination to this one-act opera, which takes six LP sides but seems to last only a few min-



*The cast of the first modern production of Rossini's Il viaggio a Reims.*

utes. And Rossini also regales us with some of his most ravishing melodies and inventive orchestration. The scintillating score is so imbued with the sense of fun that I laughed aloud as I listened.

Though its life on stage was at first short, *Il viaggio* was recently reassembled and edited for the Rossini Foundation in Pesaro, where this live performance was recorded. Every member of the cast is musically strong, negotiating Rossini's fioratura, leaps, and roulades not only easily and accurately but with obvious enjoyment. There is some very beautiful pianissimo singing as well. Each artist brings to his or her assignment both musical proficiency and a strong sense of character.

Claudio Abbado conducts the opera crisply, delicately, wittily, and *con amore*. The recorded sound is first-rate. To Charles X, then, duly honored by this delicious performance: *Vive le roi!* *Robert Ackart*

**ROSSINI: *Il viaggio a Reims*.** Cecilia Gasdia (soprano), Corinna; Lucia Valentini Terrani (mezzo-soprano), Marchesa Melibea; Lella Cuberli (soprano), Contessa di Folleville; Katia Ricciarelli (soprano), Madama Cortese; Edoardo Gimeñez (tenor), Belfiore; Francisco Araiza (tenor), Count Libenskof; Samuel Ramey (bass), Lord Sidney; Ruggero Raimondi (bass), Don Profondo; Enzo Dara (bass), Baron Trombonok; Leo Nucci (baritone), Don Alvaro; others.

Prague Philharmonic Chorus; Chamber Orchestra of Europe, Claudio Abbado cond. DEUTSCHE GRAMMOPHON ● 415 498-1 three discs \$29.94, © 415 498-4 two cassettes \$29.94, © 415 498-2 two CD's no list price.

## PHILIP GLASS: HE WROTE THE SONGS

**A**FTER three operas, "Songs from Liquid Days" is Philip Glass's first attempt at composing songs, and he didn't take any chances. He approached David Byrne, Suzanne Vega, Paul Simon, and Laurie Anderson to write lyrics that he then set to music. Each lyricist produced something quite different: Simon a clever, Kafkaesque episode; Vega two love poems; Byrne, in the title piece, an odd coupling of the mundane and the mystical. But set into Glass's distinctive framework, the lyric differences recede. It is Glass's own ideas you hear most clearly. Even the performers—if anything, an even more disparate group than the writers—yield to Glass's circular rhythms and counterpoint.

All the same, Glass was inspired by the company. Paul Simon's contribution, *Changing Opinion*, is the

most direct, accessible, and entertaining lyric on "Liquid Days"—an existential puzzle about a roomful of people trying to identify the source of a mysterious humming noise—and Glass's music is at its most playful. His arrangement calls for trombone fanfares, rhapsodic flute and piano figures, and pulsing bass. Against this jumpy backdrop, Bernard Fowler's unhurried, soulful tenor seems innocent and credulous—you want to help him search the apartment to find that hum.

Glass extends the basic rhythmic ground of *Changing Opinion* into Suzanne Vega's *Lightning*, but he steps it up to double time. For Vega, lightning is a metaphor for cataclysmic change, and Glass's agitated, whipcrack synthesized keyboard and percussion create enormous tension and electricity set against a vocal by the husky-toned Janice Pendarvis. As hypercharged a setting as Glass gives *Lightning*, he treats Vega's second contribution, *Freezing*, in the most serene manner imaginable. Gone is the wild counterpoint; in its place, Linda Ronstadt's pure, bell-like soprano carries Glass's simple melody with an almost spooky detachment.

Glass changes gears again in scoring David Byrne's two-part *Liquid Days*. In Part I, where Byrne gives us a characteristically paradoxical conjunction of the obscure and the commonplace, the Roche sisters' girlish voices bob and weave cheerfully up and down with the sing-song rhythms. Part II is the hymn-like *Open the Kingdom*, which Glass raises from a rather conventional processional march to something spectacular simply by having tenor Douglas Perry do the singing. Perry is truly an awesome presence, out of scale with all the other vocalists. He seems especially larger than life followed by Ronstadt and the Roches, who come together like clinking champagne glasses in *Forgetting*, with a lyric by Laurie Anderson.

By the time "Liquid Days" has come full circle, you've heard Paul Simon, David Byrne, Linda Ronstadt, and the Roches as you've never heard them before. It's almost enough to make you wonder whether it really was Simon, Byrne, and Ronstadt. It also forces you to rethink the relationships between



Glass: a distinctive framework

the lyricist, composer, and singer of any song; you may even feel you're listening with new ears. But you'll know you're listening to Philip Glass.

Mark Peel

**PHILIP GLASS:** *Songs from Liquid Days*. Linda Ronstadt, Janice Pendarvis, Bernard Fowler, Douglas Perry, the Roches (vocals); Kronos Quartet; the Philip Glass Ensemble, Michael Riesman cond. *Changing Opinion*; *Lightning*; *Freezing*; *Liquid Days (Part I)*; *Open the Kingdom (Liquid Days, Part II)*; *Forgetting*. CBS FM 39564, © FMT 39564, © MK 39564, no list price.

Perahia: patrician self-effacement



## PERAHIA'S FORMIDABLE BEETHOVEN

HAVING completed a splendid Mozart concerto cycle for CBS, pianist Murray Perahia has begun a Beethoven cycle for the same label with a coupling of the Piano Concertos No. 3 and 4. Interpretively, this first installment must be classed with the most select handful of earlier recordings of each of these works, and, not surprisingly, it surpasses them all in terms of sound quality. It surpasses just about all of them, too, in terms of the orchestral contribution, a more critical element in these concertos than in any composed before them, and in the exceptional thoroughness with which the solo and orchestral elements are integrated.

The orchestra in this case is the Concertgebouw of Amsterdam, with Bernard Haitink conducting. This is Haitink's third Beethoven concerto cycle, following an earlier one in Amsterdam with Claudio Arrau and one in London with Alfred Brendel. I don't think any other conductor has made so many recordings of these concertos. Perahia, of course, was his own conductor throughout the Mozart cycle, but he has stated that he also enjoys playing those concertos with other conductors. You sense that he and Haitink must have felt special pleasure in this Beethoven collaboration, which suggests not a first encounter but a lifetime of joint exploration.

The pianist whom Perahia most resembles in these performances is Solomon, the mid-century English performer known professionally only by his first name. Solomon's solo playing was characterized by the same sort of fastidiousness, of patrician self-effacement in response to the music's own character, that Perahia displays here. That approach is especially well suited to the G Major Concerto, in which the dramatic and playful moments are tempered by an aristocratic, even Olympian sense of serenity and restraint, the very qualities that have

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# BEST OF THE MONTH

always marked Perahia's music making.

With each concerto fitting snugly on a single side and a total playing time just under seventy minutes, the beautifully recorded LP is a wonderful value. It's very good value even on CD, and the sound should be even more impressive in that format. While Perahia and Haitink—and CBS—have set a formidable standard for themselves in completing the cycle, this release is treasurable in its own right—the sort of thing that makes comparisons rather meaningless and duplications fascinating. *Richard Freed*

**BEETHOVEN:** *Piano Concerto No. 3, in C Minor, Op. 37; Piano Concerto No. 4, in G Major, Op. 58.* Murray Perahia (piano); Concertgebouw Orchestra, Bernard Haitink cond. CBS ● IM 39814, © IMT 39814, © MK 39814, no list price.

## THE BANGLES COME INTO THEIR OWN

**T**HE Bangles, four photogenic young women who sing like angels and write (and play) impeccably melodic, tough-minded Sixties-derived pop, are such a great idea for a group that if they didn't already exist somebody would probably have to invent them. But what their new album, "Different Light," proves is that they're also very much for real, very much their own band.

In last year's "All Over the Place" the group was wearing its influences on their collective sleeve. The songs were almost collage-like in their appropriation of bits and fragments from Beatles, Byrds, and Buffalo Springfield records, and the vocals, which someone aptly described as

the Mamas without the Papas, were so lush it was almost shocking. On this latest effort, the Bangles have relaxed a bit. The songs aren't as compulsively hook-laden, and the influences seem better digested. You may not catch, say, the wonderful *Cool Jerk* bass line that propels their *Walking Down Your Street* except on a subconscious level, but the quote works like gangbusters anyway.

Producer David Kahne has discretely modernized the band's sound with keyboard flourishes and the occasional sound effect. Sixties purists may be offended, but since the band's trademark jingle-jangle guitars and four-part harmonies remain prominently displayed, I, for one, can let that pass. The songs themselves, meanwhile, range from the gorgeous to the merely memorable. High points are Jules Shears's *If She Knew What She Wants*, a stunningly crafted look at the difficulty of loving someone whose emotional development is a tad arrested; the band's own *Let It Go*, a seamless mixture of instrumental grit and vocal sweetness; and bassist Michael Steele's version of *September Gurls*, which actually improves on Alex Chilton's legendary original.

As for the rest, including *Manic Monday*, the infectious hit single by Prince (who wrote it under a pseudonym), only a total churl could put up any resistance. "Different Light" is an absolutely wonderful album, one of the must-haves of 1986.

*Steve Simels*

**THE BANGLES:** *Different Light.* The Bangles (vocals and instrumentals); other musicians. *Manic Monday; In a Different Light; Walking Down Your Street; Walk Like an Egyptian; Standing in the Hallway; Return Post; If She Knew What She Wants; Let It Go; September Gurls; Angels Don't Fall in Love; Following; Not Like You.* COLUMBIA FC 40039, © FCT 40039, © CK 40039 no list price.

*The Bangles: from the gorgeous to the merely memorable*



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### JAZZ

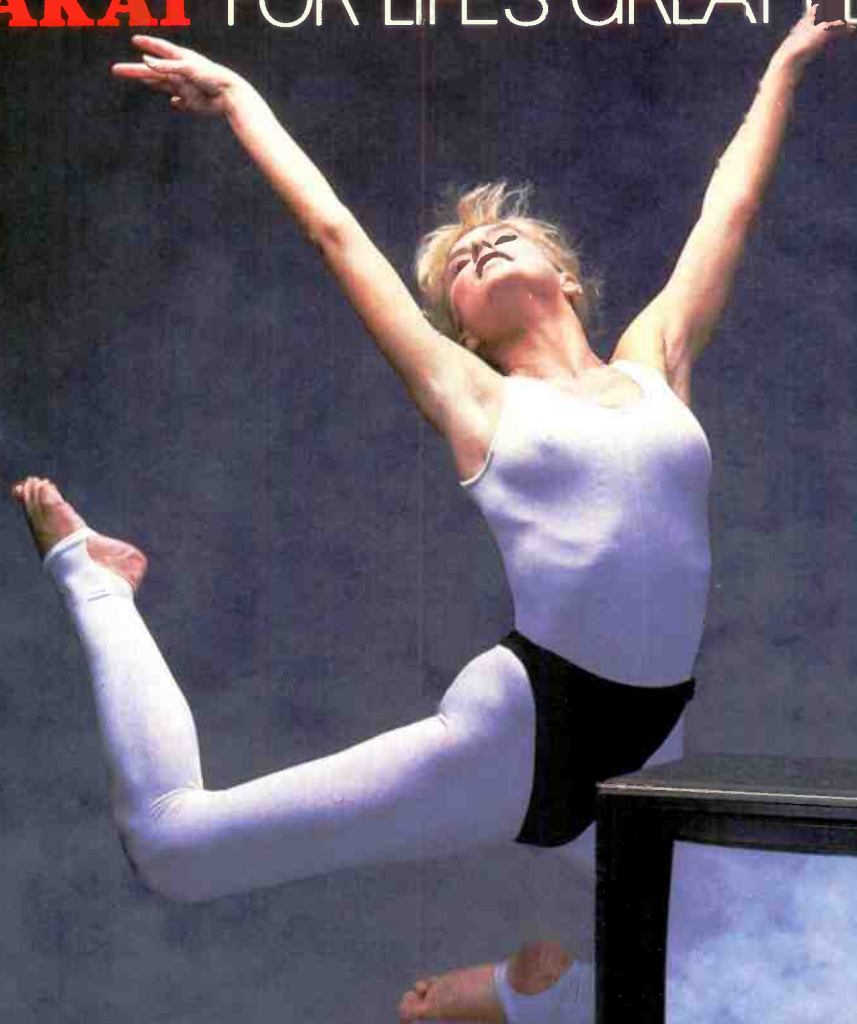
- **KENNY DREW TRIO.** RIVERSIDE 631-224. Recorded in 1956.
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- **BEETHOVEN:** *Piano Concertos Nos. 1-5.* Schnabel, Sargent. ARABESQUE Z6549-50-51 (three CD's). Classic Schnabel, recorded 1932-1935.
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**THE BANGLES:** *Different Light* (see Best of the Month, page 110)

**PHILIP GLASS:** *Songs from Liquid Days* (see Best of the Month, page 107)

**MARK GRAY:** *That Feeling Inside*. Mark Gray (vocals); vocal and instrumental accompaniment. *Please Be Love; She Will; You're the Reason; Dance with Me; I Need You Again;* and five others. COLUMBIA FC 40126, © FCT 40126, no list price.

Performance: *Ready for stardom*  
 Recording: *Good*

Mark Gray wants to be a star. He's tried about everything in the last few years. First he was a member of Exile, but he left the band just before it broke into the big time. Then he went solo and wore a big gray fedora and sat at the piano. It made him look different, all right, but it also made him look like Eliot Ness. Then he cut a duet with Tammy Wynette, which probably even *he* doesn't remember. And now here he is with his third Columbia LP, still looking for a corner, as Rosanne Cash might say.

Gray has pipes that run somewhere along the lines of David Clayton Thomas, Lee Greenwood, and Engelbert Humperdinck. That leaves a lot of room, you might say, but then Gray's album does too. This is one of those "let's try a little of everything and see if any of 'em go" LP's, which means he even takes a shot at Patsy Cline's *Walkin' After Midnight*. It takes guts for a male singer to cut this song, and Gray does a credible, if slightly jive, job. He's a talented singer, though, with plenty of feeling for a lyric, even if the tunes are usually a little overdressed—and overblown. If Gray could ever decide what he wanted to be—besides a star, that is—he'd probably be a hit. *A.N.*

**LEVEL 42:** *World Machine*. Mark King (bass, vocals); Phil Gould (drums); Mike Lindup (keyboards, vo-



KEITH MORRIS/COLUMBIA RECORDS

## "KING OF AMERICA"

**E**LVIS COSTELLO once told an interviewer that he didn't plan to be around to witness his artistic decline, but you couldn't have proved that by his last couple of albums. They were fussy, wildly over-produced, and, in general, too clever by half. His new "King of America," while not exactly a return to the transcendent form of "This Year's Model," contains the most interesting music he has made in a long time, and the fact that it sounds like hardly anything else on the radio at the moment is merely icing on the cake. "King of America" is also the first release to reflect Costello's reversion to his original name, Declan Patrick MacManus. Transitionally, the performance is credited to "The Costello Show (Featuring Elvis Costello)," while MacManus is credited for songwriting and co-production.

Lyricaly, Costello/MacManus hasn't changed much. He remains obsessed with the detritus of romantic relationships and the ways people manipulate each other—"emotional fascism," he calls it. But other targets are skewered too, and his gift for wordplay remains intact. In the title song, for example, he meets a girl "working for the ABC News" and observes, "It was as much of the alphabet as she knew how to use." There is also a bit of social commentary in *Little Palaces*, about "the sedated homes of England," and a new emphasis on what can only be described as cabaret/torch songs—*Poisoned Rose*, for example, which features jazz bassist Ray Brown, is a literate, urbane, heart-

on-sleeve weeper that could be covered without difficulty by Bobby Short on a crying jag.

Musically, the album is stripped-down and raw-edged in all the best ways. The backing on several tracks is by the stars of the other Elvis's touring band, including the great James Burton on guitar, and the result is a sort of modernized Sun Records sound that nudges Costello into the most unpredictable and emotive singing of his career.

Add to all this some inspired covers—J. B. Lenoir's *Eisenhower Blues* (not bad for white boys) and the Animals' *Don't Let Me Be Misunderstood*, a perfect choice for a man who's been misunderstood constantly—and a fine guest appearance by his old back-up band, the Attractions, on *Suit of Lights*. What you get is, if not the Elvis Costello album of your dreams, certainly one of the most unexpectedly rewarding albums of the last several months. As Harry Golden used to say in an altogether different context, Enjoy!

*Steve Simels*

**THE COSTELLO SHOW:** *King of America*. Elvis Costello (vocals, guitar); other musicians. *Brilliant Mistake; Lovable; Our Little Angel; Don't Let Me Be Misunderstood; Glitter Gulch; Indoor Fireworks; Little Palaces; I'll Wear It Proudly; American Without Tears; Eisenhower Blues; Poisoned Rose; The Big Light; Jack of All Parades; Suit of Lights; Sleep of the Just*. COLUMBIA FC 40173, © FCT 40173, no list price.

### EXPLANATION OF SYMBOLS:

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cals); Boon (guitars); vocal and instrumental accompaniment. *Something About You; World Machine; Physical Presence; Leaving Me Now*; and four others. POLYDOR 827 487-1 \$8.98, © 827 487-4 \$8.98, © 827 487-2 no list price.

Performance: *Inoffensive*  
Recording: *Good*

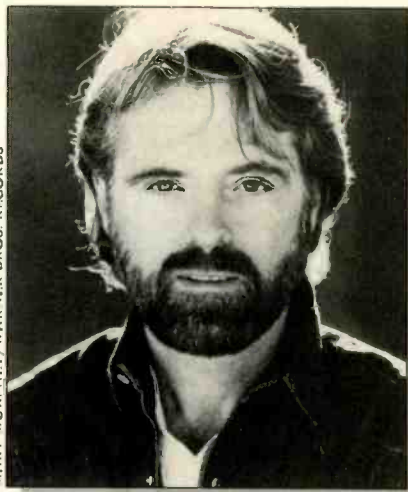
Level 42's third American LP is nice, agreeable, airport-lounge music, soft funk played with a quasi-jazz and Eurodisco feel, very atmospheric and non-threatening. This isn't to suggest that the musicians in Level 42 are second-rate. Bassist Mark King is a perennial winner in British music polls, the rest of the band is as tight as a drum, and the vocals are consistently strong. In fact, I found myself wishing these guys would hit a sour note just to inject a little excitement. The problem is that "World Machine" is flat-out bland. From the first track it settles into a slow, lounge-chair groove that's too slow to dance to and too cool to engage you emotionally, and it never budges. Recommended only in small doses. *M.P.*

**JULIA MIGENES-JOHNSON:** *In Love.* Julia Migenes-Johnson (vocals); instrumental accompaniment. *Tonight; So in Love; People; I Love Paris; My Funny Valentine; Don't Cry for Me Argentina; Getting to Know You*; and five others. RCA ARL1-7034 \$9.98, © ARK1-7034 \$9.98, © RCD1-7034 no list price.

Performance: *Delightful*  
Recording: *Very good*

Classical artists crossing over into pop repertoire usually fall into two categories: exciting or embarrassing. Most, unfortunately, end up in the latter category. But not Julia Migenes-Johnson—the soprano many moviegoers know from Rosi's *Carmen*, TV audiences from the Met telecast of Berg's *Lulu* several seasons ago, and some of us from a 1968 Vienna Volksoper recording of *West Side Story*. In fact, I'd go so far as to say that, among operatically trained singers, she is easily the one who sounds most "at home" in pop repertoire since Dorothy Kirsten gave up splitting her time between opera stages and warbling radio duets with Frank Sinatra and Bing Crosby in the Forties and Fifties.

The secret is that Migenes-Johnson knows how to make the lyrics come first, and then to express those lyrics without distorting the musical line. When she sings the Gershwins' *Love Is Here to Stay* or Rodgers and Hart's *My Funny Valentine*, for example, she scales her voice down to an intimate purr that convinces you she means every word she's singing—and that she's singing directly to you, not to some anonymous shadow in the top balcony. Yet with the more operetta-like *And This Is My Beloved* from *Kismet* or *I Could Have Danced All Night* from *My Fair Lady*, she lets loose



MARY MURPHEY/WARNER BROS. RECORDS

*Murphey: back to grass roots*

vocally in a way that shows off her range, though still not at the expense of any of the words.

All twelve of the songs on this West German-recorded album are familiar from Broadway shows or Hollywood movies. The arrangements (by Gershon Kingsley, Peter Knight, Hans Hamerschmid, and Arno Flor) are in the understated, middle-of-the-road, European style of the past twenty years, which is a plus for this repertoire. If Migenes-Johnson keeps up this standard, she may give "crossover" a good name again. *Roy Hemming*

**STEPHANIE MILLS.** Stephanie Mills (vocals); instrumental accompaniment. *Stand Back; Automatic Passion; Rising Desire; Time of Your Life; Hold On to Midnight*; and three others. MCA MCA-5669 \$8.98, © MCAC-5669 \$8.98.

Performance: *Full of life*  
Recording: *Very good*

Although at times producer George Duke horns in on her act with too much synthesized clutter, Stephanie Mills is in such full command of her vocal resources here that she manages to override it and to endow some rather undistinctive material with a rare and welcome expressiveness. There is conviction in every word she sings, and her delivery is unflaggingly energetic. One outstanding selection is worth the price of the entire album: *I Have Learned to Respect the Power of Love* shimmers with gospel flavor, and Mills hits some high notes that tug at the guts. This is Stephanie Mills at her best. *P.G.*

**BILL MONROE:** *Bill Monroe and Stars of the Bluegrass Hall of Fame.* Bill Monroe (vocals, mandolin); Jim and Jesse. Ralph Stanley, the Country Gentlemen, Bobby Hicks, Mac Wiseman, Del McCoury, the Osborne Brothers, others (vocals and instrumentals). *I'm on My Way Back to the Old Home; Can't You Hear Me Callin'; Travelin' This Lonesome Road; I'm Going Back to Old Kentucky; Remember the Cross;*

and five others. MCA • MCA-5625 \$8.98, © MCAC-5625 \$8.98.

Performance: *The real thing*  
Recording: *Digital*

Three years ago, Bill Monroe recorded an album called "Bill Monroe and Friends" that paired him with ten of the biggest names in contemporary country music. It was a disaster, to put it mildly—stiff and artificial from top to bottom. Monroe is trying basically the same format here, but with ten of the oldest and most respected names in bluegrass. That makes more sense, of course, since Monroe, the Father of Bluegrass, basically started the whole genre to begin with. You can even get a quick history of the music just from the songs he's selected—all of which he wrote.

There are some bone-chilling performances on this LP, and not a clinker in the bunch. The emphasis is more on vocal harmony and ensemble work than flashy instrumental work, and Monroe's impassioned duet with Ralph Stanley, *Can't You Hear Me Callin'*, will positively raise the hair on your arms. The Jim and Jesse (and Bill) version of *I'm on My Way Back to the Old Home* isn't far behind, and the way Monroe and the Country Gentlemen do *Lord, Protect My Soul* will start you thinking about getting your worldly goods in order.

As a bonus, this album was recorded digitally, without any overdubs or even the use of earphones, so what you get here is the real thing—the bluebloods of bluegrass hunkered over a microphone together, pickin' and singin' front-porch style. If you don't own any bluegrass records and think you might buy one, this is it. If you're already into bluegrass—or you're lucky enough to have this LP—then you know they just don't get any better than this. *A.N.*

**MICHAEL MARTIN MURPHEY:** *Tonight We Ride.* Michael Martin Murphey (vocals, guitar, banjo); instrumental accompaniment. *Tonight We Ride; Rollin' Nowhere; Innocent Hearts; Face-to-Face with the Night; Building Bridges;* and six others. WARNER BROS. 25369-1 \$8.98, © 25369-4 \$8.98.

Performance: *Back to basics*  
Recording: *Good*

Michael Martin Murphey has been around a long time, of course, scoring a big pop hit with *Wildfire* in 1975. It wasn't until the last few years, however, that his country roots finally took commercial hold with a series of glossy country-pop hits, including *What's Forever For*, *Don't Count the Rainy Days*, and *Disenchanted*, all of which he recorded for Capitol.

Now, on his first Warner Bros. album, the Texas-born Murphey has returned to his grass-roots influences—western-swing, honky-tonk, rock-and-roll, fiddle tunes, cowboy songs in the Mexican/Marty Robbins style, and romantic ballads—all done in a more

understated and traditional manner than his string of Capitol hits. The thinking, I suppose, was to nab the people who listen to country radio and buy country records with the commercial cuts, then expose them to the music Murphey loves—and writes—best.

Murphey says there's a thread that runs through this album—one of operating outside the system, with a sub-theme of facing up to your mistakes. Whether that's a commentary on the direction his records have taken in the past years, I don't know. But this is a thoroughly decent little album, a bit *too* calculated and well rounded, perhaps, with a couple of songs that try too hard, especially *Building Bridges*, a duet with Pam Tillis, Mel's daughter, and *Santa Fe Cantina*, which has our protagonist imagining that a shopping-mall bar is really a you-know-what. On the other hand, Murphey has a couple of wistful winners here, notably *The One That Got Away*. And whenever his songwriting turns up a line that reads slightly out of kilter, at least his sweet Texas tenor goes a long way toward bailing it out. Hang in there, Michael. *A.N.*

**ROBERT PALMER: *Riptide*.** Robert Palmer (vocals); vocal and instrumental accompaniment. *Riptide; Hyperactive; Addicted to Love; Trick Bag; Discipline of Love*; and three others. ISLAND 90471-1 \$8.98, © 90471-4 \$8.98.

Performance: *Spotty*  
Recording: *Good*

On his new album, Robert Palmer trots out all his familiar trademarks—high-tension blue-eyed soul underscored here and there by traces of reggae and the considerable influence of Little Feat. The eight tracks are bookended by opening and reprise versions of the old Gus Kahn-Walter Donaldson *Riptide*, and the program bears out the title song's confusion about love. But the only real grabber is *Addicted to Love*, which comes across as more than a mildly horny listen. *Discipline of Love* and *I Didn't Mean to Turn You On* do get the blood rushing, although nowhere in particular. Alas, most of the other tunes just idle in place when you find yourself dying to rev. Too bad. *A.N.*

**TEDDY PENDERGRASS: *Workin' It Back*.** Teddy Pendergrass (vocals); vocal and instrumental accompaniment. *Love 4/2; One of Us Fell in Love; Never Felt Like Dancin'; Let Me Be Closer*; and four others. ASYLUM 60447-1 \$8.98, © 60447-4 \$8.98.

Performance: *Excellent*  
Recording: *Very good*

Sometimes tragedy has a way of forcing an artist to seek greater depths within himself. That was certainly the case with Teddy Pendergrass. Yet, even before he was seriously injured in an automobile accident, Pendergrass seemed to be abandoning the ridiculously exaggerated macho posturing of his early recordings and was beginning to address a

broader range of emotions. With this album, the second released since his accident, the shift seems to be complete. Here is a far more mellow Teddy Pendergrass than we usually encountered in the past, with more moderately paced numbers, though he can still generate ample excitement on rockers like *Never Felt Like Dancin'*. The best tracks here, *Love 4/2* and *One of Us Fell in Love*, come at the beginning of side one, and it was hard for me to get past them. But everything, really, is on the high level that is characteristic of Pendergrass's current work. *P.G.*

**ANTHONY PHILLIPS: *Ivory Moon (Piano Pieces 1971-1985)*.** Anthony Phillips (piano). *Sea-Dogs Motoring, Suite; Tara's Theme (from Masquerade); Winter's Thaw; The Old House; Moonfall; Rapids*. PVC/PASSPORT PVC-8946 \$8.98, © PVCC-8946 \$8.98.

Performance: *Exposed*  
Recording: *Very good*

Genesis fans know Anthony Phillips as a founding member of that group. After he parted company with Peter Gabriel *et al.* in 1971, Phillips began a relatively obscure solo career that has produced a

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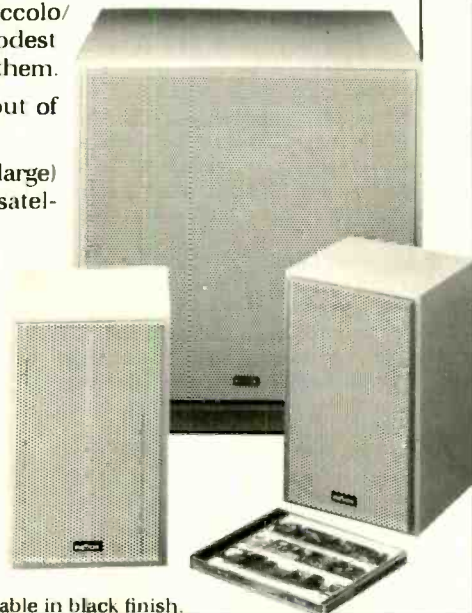
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## BROWNE'S BALANCING ACT

**J**ACKSON BROWNE'S new "Lives in the Balance" is his first explicitly political work, unless you count his contributions to the "No Nukes" album. While it's tempting to dismiss him as one of those privileged California tofu liberals, I don't doubt that he's sincere in his Reagan-era queasiness. And you have to give him credit

long succession of one-man projects. "Ivory Moon" is the sixth album in a series called "Private Parts and Pieces." What distinguishes this one from the rest of Phillips's work is its instrumentation: solo piano. Now, a guitarist who records an album of solo piano is either very much his own man or very foolish. I think both apply in the case of "Ivory Moon," a bad album that sounds good—flawed, but quite entertaining nevertheless.

Phillips isn't afraid to expose his technical shortcomings, mainly a heavy-handed sense of dynamics that's frequently at odds with the material. To his credit, he has the good sense to keep his writing, particularly the harmony parts, well within his comfort zone; unfortunately, this leaves you with the feeling that something is missing. Yet, despite these limitations, I found myself liking the record for its robust, uncompromising melodies and unapologetic romanticism. The compositions range from short introspections that sound almost like the *Lyric Pieces* of Grieg (though Phillips's hammering robs them of much of their lyricism) and fanciful, childlike melodies like *Tara's*

simply for articulating issues. This is, after all, such a politically debased period that the MTV jock who introduced the première broadcast of the video of *For America*, the lead song of the album, felt compelled to reassure the audience that it "isn't propaganda."

The lyrics do present a rather pointed critique, but the message is blunted because the music by which it is carried is fairly tepid. Browne has never been terribly convincing when he's tried to rock out, and since his melodic gift has been somewhat undernourished of late, he doesn't have much else to fall back on. On other tracks here he tries riffs looted from Bruce Springsteen (*Lawless Avenue*), ersatz Latinisms (ditto), and even a sort of affected tough-guy bluesiness (*Till I Go Down*), but none of it quite jells.

On the better songs, the title track and *Black and White*, Browne does sound as if he's groping for a new and more convincing style. And you can't help but be charmed, a little, by the spectacle of a very rich corporate pop singer bemoaning the status quo and risking the loss of his Yuppie audience in the process.

"Lives in the Balance" is hardly a great work of art, but it's a respectable effort. It will be interesting to see if Browne continues in this vein or reverts to type. *Steve Simels*

**JACKSON BROWNE:** *Lives in the Balance*. Jackson Browne (vocals, guitar); vocal and instrumental accompaniment. *For America*; *Soldier of Plenty*; *In the Shape of a Heart*; *Candy*; *Lawless Avenue*; *Lives in the Balance*; *Till I Go Down*; *Black and White*. ASYLUM 60457-1 \$8.98, © 60457-4 \$8.98, © 60457-2 no list price.

*Theme* to big, swelling pieces, like *Rapids*, that could almost be Broadway show tunes. Call it Lite Piano, but if you don't mind a frank display of naked emotion, you may like it. *M.P.*

**RICKY SKAGGS:** *Live in London*. Ricky Skaggs (vocals, guitars, mandocaster, mandolin, fiddle); Elvis Costello (vocals, guitar); the Ricky Skaggs Band (vocals and instrumentals). *Uncle Pen*; *Cajun Moon*; *Country Boy*; *You Make Me Feel Like a Man*; *Rockin' the Boat*; *Don't Get Above Your Raising*; and four others. EPIC ◊ FE 40103, © FET 40103, no list price.

Performance: *Ricky struts his stuff*  
Recording: *Lovely*

For all his dazzling musicianship and almost singlehanded resurrection of true country music, there are times when Ricky Skaggs appears embarrassingly like the Gomer Pyle of country music—so sincere, so pure of heart, so hillbilly rube. Like when he allows actor Charles Haid (Andy Renko on *Hill Street Blues*) to introduce him with all the panache of a backwoods carnival barker, then runs through *Cajun Moon*

with all the warmth of a teen contestant on *Star Search*. As if the English didn't already think we were heathens.

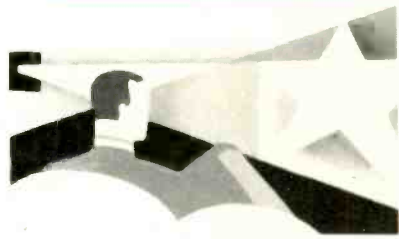
Having said that, let me quickly add that this is a pretty terrific album once Ricky cuts the cornpone. He never does learn how to speak to an audience, and he comes up short in tossing off any dialogue you'd want to take home with you. But then talking is not what Skaggs does best. Once he picks up his axe of the moment—assisted by the band of the hour—he moves into your head and starts rearranging the furniture. There are some terrific new songs here, Peter Rowan's *You Make Me Feel Like a Man* and Jim Rushing's *Rockin' the Boat* foremost among them. The old standbys, too, like *Country Boy* and *Heartbroke*, have new vigor in the live renditions. But where Skaggs proves he deserved his recent CMA Award is on the concept for *Don't Get Above Your Raising*, originally a nice, low-key Flatt and Scruggs country-bluegrass tune. Skaggs has revved up the tempo with a stunning synthesis of rock, r-&-b, jazz, and progressive country. Despite his strong and expressive mountain tenor, picking has always seemed to receive more attention from Skaggs than emotive vocals. On this song he tosses off the vocal in an offhand manner, but he squeezes stuff out of that guitar that most pickers don't even know exists. Certainly Elvis Costello, who joins him here, looks pathetic when he goes to trade off guitar licks. But Elvis wins in the vocal department, infusing his stanzas with urgency, hostility, and underdog desperation. It only makes Skaggs seem all the more like poor Gomer, lost in the big time sha-zamm! of playing jolly old England. *A.N.*

**ZZ TOP:** *Afterburner*. ZZ Top (vocals and instrumentals). *Sleeping Bag*; *Stages*; *Work Up with Wood*; *Rough Boy*; *Can't Stop Rockin'*; and five others. WARNER BROS. 25342-1 \$9.98, © 25342-4 \$9.98.

Performance: *Unfeeling blues*  
Recording: *Gorgeous*

Listening to "Afterburner" you can't help marveling at how flexible a form the blues is and how cleverly the boys in ZZ Top dress it up. No matter how technopoppy their rhythms get or how much electronic glitz they dump on top of those three basic blue chords, however, this is still recognizably the same music this band has been grinding out since their days playing Texas roadhouses. That says a lot for the consistency of their vision, but unfortunately consistency is all this particular effort has to recommend it, since the rowdy charm and humor of ZZ Top's recent efforts is replaced here by a sort of staid professionalism. It sounds like a million bucks, of course, and Billy Gibbons's ten-wheeler-in-outer-space guitar work remains compelling. But mostly it comes off as a contractual obligation album, and it confirms an old blues truism: you can't fake the feeling. *S.S.*

## FILM & THEATER



**THE COLOR PURPLE** (Quincy Jones). Original-soundtrack recording. Tata Vega, Andrae Crouch, Sonny Terry (vocals); members of the Christ Memorial Church of God in Christ Choir; Coleman Hawkins (tenor saxophone); Louis Armstrong (cornet, trumpet); Jerome Richardson (soprano saxophone); Bobby Scott (piano); other musicians. QWEST 25389-1 two discs \$17.98, © 25389-4 two cassettes \$17.98.

Performance: *Hill and dale*  
Recording: *Quite good*

There is good, even great music in this two-record set, but only when you make it past the trite film score, which sounds like a number of things we have all heard many times before and have little need to hear again. On the good side, there is the rousing gospel sound of

Andrae Crouch and a handful of robust vocals by one Tata Vega. The greatness comes from the past, in the form of vintage recordings by Sidney Bechet, Louis Armstrong's Hot Five, and Coleman Hawkins. C.A.

**DOWN AND OUT IN BEVERLY HILLS.** Original-soundtrack recording. Little Richard: *Great Gosh A'mighty*; Tutti Frutti. David Lee Roth: *California Girls*. Randy Newman: *I Love L.A.* The Mariachi Vargas de Tecalitlan: *El tecalitleco*. And six others. MCA MCA-6160 \$9.98, © MCAC-6160 \$9.98, © MCAD-6160 no list price.

Performance: *A mixed bag*  
Recording: *Good*

If anyone needs any proof that movie music is going through a crisis period these days, here it is. Eclectic is one thing, but this mishmash is down and out in much more than Beverly Hills.

It all starts out promisingly with Little Richard's version of *Great Gosh A'mighty* and comes alive again briefly with his *Tutti Frutti* and Randy Newman's *I Love L.A.* But most of the album (mainly by Andy Summers, lead guitarist of the Police) drifts aimlessly through some mariachi material, a trendy stab at rhythmic minimalism, and a main theme that owes more than a little debt to Henry Mancini's early-

Sixties "cool" romanticism—all of it musically routine and uninspired.

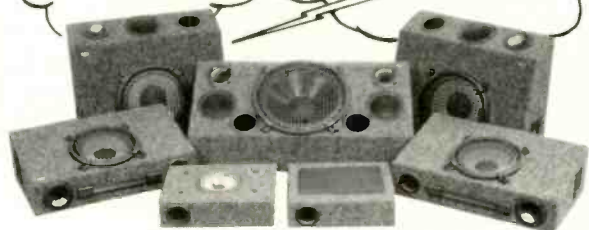
Roy Hemming

**TROUBLE IN MIND** (Mark Isham). Original-soundtrack recording. Marianne Faithfull (vocals); orchestra, Mark Isham cond. ISLAND 90501-1 \$8.98, © 90501-4 \$8.98, © 90501-2 no list price.

Performance: *Moody*  
Recording: *Lush*

*Trouble in Mind* is the latest film from Robert Altman's protégé Alan Rudolph, a director whose output has been, shall we say, uneven (his *Welcome to L.A.* was one of the great stinkeroos of the Seventies). The soundtrack album, though, masterminded by composer Mark Isham, makes for highly evocative listening, a moody mixture of Bernard Herrmann in his *Taxi Driver* phase and lush, Windham Hill-style jazz-pop fusion. The standout is the title track, an old blues standard rendered by Marianne Faithfull in her patented whiskey-soaked rasp. The rest, all instrumental except for Faithfull's compelling reading of a new Kris Kristofferson song, *The Hawk*, strikes my ears as a highly effective contemporary equivalent of all those Fifties jazz scores out of the *Naked City* school. Definitely worth a listen. S.S.

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**TERENCE BLANCHARD AND DONALD HARRISON: *Discernment*.** Terence Blanchard (trumpet); Donald Harrison (alto saxophone); Mulgrew Miller (piano); Phil Bowler (bass); Ralph Peterson, Jr. (drums). *When the Saints Go Marching In; Directions; Akira; Dorchester House*; and four others. CONCORD JAZZ GW-3008 \$8.98.

Performance: *Choice*  
Recording: *Excellent*

I used to think that Marion Williams's recording of *When the Saints Go Marching In* was the only digestible one around, but now there is another. It's in this new album by the young New Orleans-born team of Terence Blanchard and Donald Harrison. Harrison's arrangement of *Saints* takes the old war horse seriously but imbues it with enough whimsy to make it palatable. And what follows is even better. "*Discernment*" is a superb album by a group of young musicians who are dedicated to the jazz tradition, and I hope they will remain so. The popularity of Wynton Marsalis's traditional music has proved a point jazz people have been trying to make for years. Let's keep a good thing going. C.A.

**BENNY GOODMAN: *Let's Dance*.** Benny Goodman and His Orchestra. *Let's Dance; Don't Be That Way; You Brought a New Kind of Love to Me; King Porter Stomp; (I Would Do Most) Anything for You*; and four others. MUSIC MASTERS ● 20112 \$8.98, © 40112 \$8.98, © 60112 \$12.99.

Performance: *Bright and swinging*  
Recording: *Crisp and clean*

Rumor has it that Benny Goodman, seventy-six, decided he couldn't stay inactive after all the attention Artie Shaw, seventy-five, got last year when he fronted a dance band bearing his name for the first time in nearly thirty years. And so, early last fall, there was B.G. back on stage too, leading a band for the first time since long before he was hospitalized with a heart ailment in late 1982.

Instead of organizing an all-star band of old-timers, Goodman took over the existing orchestra of twenty-six-year-old Loren Schoenberg. It was primarily a rehearsal and studio band that performed publicly off and on and only in the New York area. After several weeks of rehearsals with Goodman's charts, the band made its first appearance at the Waterloo Village Festival in New

Jersey—to a tumultuous reception. Following more rehearsals, the band taped a TV special for PBS before an invited audience. That special was aired this past March, and the soundtrack is on this new album. None of the foregoing is related in Harlan Ellison's warmly nostalgic liner notes, and that's too bad, for unless you're familiar with Goodman's personnel over the years, you wouldn't know that this is essentially a new band of mostly unknown, young musical swingers. And swing they do, proving that, with the right leadership, there are still good young musicians out there who can dig into some of the now-classic Big Band charts as excitingly as any old-timers.

Of course, Goodman *did* bring a few oldsters in for the date too—such as drummer Louis Bellson, pianist Dick Hyman, trumpeter Paul Cohen, and trombonist Bobby Pring—and several of them shine in solo spots. But it's the band as a whole that really shines, as if they'd all been playing for months at the Capitol or the Paramount.

Actually, the taping took place in New York City's glittering new Marriott Marquis Hotel in Times Square, in an obvious attempt to re-create the atmosphere of a Thirties hotel-room dance date. On TV, the invited audience seemed too staid and sedate, casting a pall over much of the show. But hearing just the music itself on this recording is another experience altogether. The Fletcher Henderson arrangements have a good deal of bounce and bite and benefit greatly from the well-engineered stereo sound. As for Goodman's own silky-smooth solo in Gordon Jenkins's *Goodbye*, it certainly belies his years—and makes us reluctant to take the song title literally in any way, shape, or form. I want to hear more from *this* band.

Roy Hemming

**HELEN HUMES: *E-Baba-Le-Ba—The Rhythm and Blues Years*.** Helen Humes (vocals); instrumental accompaniment. *If I Could Be with You; Knockin' Myself Out; Airplane Blues*;

*Helen Humes: engaging, nostalgic fun*



*Rock Me to Sleep; This Love of Mine; Sad Feeling; Helen's Advice*; and seven others. SAVOY SJL 1159 \$8.98, © SJK 1159 \$8.98.

Performance: *Impeccable*  
Recording: *From fair to good*

The album notes here are a stale rehash of previously printed facts mixed with misguided observations, but there is nothing stale about Helen Humes's performances. The set consists of recordings made for Savoy and Discovery between 1944 and 1950, when Humes had carved out a wide reputation as a vocalist with Count Basie's band and was taking full advantage of her blues background to make her mark with the postwar rhythm-and-blues generation.

Four sessions are represented, and all have engaging qualities. The first set was arranged and produced by Leonard Feather, who also took over the piano chair. Despite these handicaps, Humes and a group of excellent musicians turn out four enduring sides. Better material and less archaic arrangements, however, give the second session, a 1950 West Coast date with Marshall Royal, an edge. The album's most vigorous track is *E-Baba-Le-Ba*, which is heard in the celebrated recording from the Los Angeles Shrine Auditorium with Roy Milton's band. Energetic and full of double entendres, it was clearly written for the gallery and became the most popular item in the Helen Humes repertoire.

Finally, there are four more 1950 selections, this time with more modern accompaniments by tenor saxophonist Dexter Gordon and a sextet. A suggestive bit of fun from this session is *Helen's Advice*, a variation of which also appeared as *Million Dollar Secret*. There is a certain natural sameness to this music, but the honks, riffs, and shouts nevertheless add up to a good half-hour of nostalgic fun. C.A.

**BOBBY HUTCHERSON: *Good Bait*.** Bobby Hutcherson (vibraphone); Branford Marsalis (soprano and tenor saxophones); George Cables (piano); Ray Drummond (bass); Philly Joe Jones (drums). *Love Samba; Montgomery; In Walked Bud; Highway One*; and three others. LANDMARK ● 501 \$8.98, © 5-501 \$8.98, © FCD 640-501 \$16.98.

Performance: *Excellent*  
Recording: *Excellent*

When it was first released on vinyl last year, Bobby Hutcherson's "*Good Bait*" album served to launch Orrin Keepnews's Landmark label. Now it is also available on a Compact Disc imported from Japan. Either way you spin it, it is a worthwhile set.

Hutcherson has not exactly been shunned by the recording industry, but he has never gotten the public recognition his talent deserves. Here he shows his mettle as he leads a quintet completed by saxophonist Branford Marsalis, the superb pianist George Cables, bassist Ray Drummond, and the late drummer Philly Joe Jones. Together



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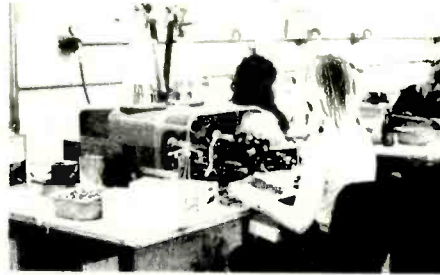
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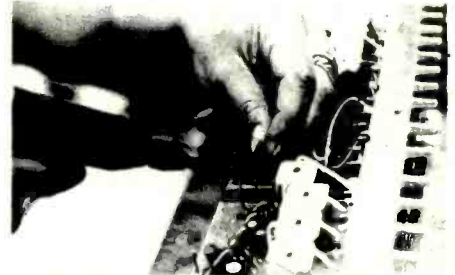
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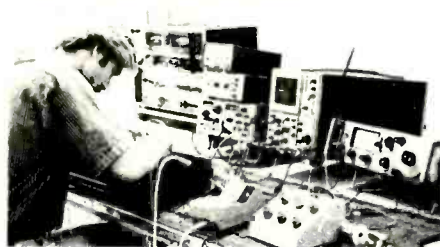
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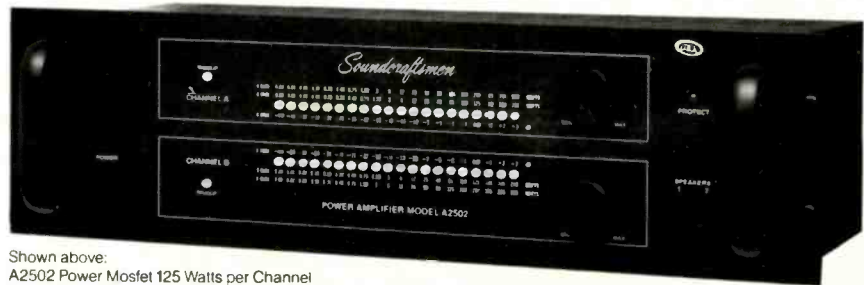
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they produce a tightly knit sound that will give both body and mind a workout, and one track, Thelonious Monk's *In Walked Bud*, is worth the entire price of admission. C.A.

**ESTHER PHILLIPS: *A Way to Say Goodbye*.** Esther Phillips (vocals); instrumental accompaniment. *It's All in the Game; Mr. Bojangles; Shake This Off; Nowhere to Run; Goin' in Circles; We Were Through; A Way to Say Goodbye; Mama Said; Fa Fa Fa Fa.* MUSE MR 5302 \$8.98.

Performance: *Dependable*  
Recording: *Good*

In August 1984, just five months before her death, Esther Phillips capped her recording career with an album that in many ways sums up her life. Its eerily prophetic title is taken from one of the songs, and its program reflects the many pop-music styles she had seen come and go in her three and a half decades of performing. Phillips had roots in rhythm-and-blues, but as she matured "Little Esther" began to win over jazz audiences with a nasal vocal style reminiscent of Dinah Washington. That nasal quality became more pronounced toward the end, but Phillips's own virtues always shone through. These final statements do not compare favorably with her work in the Seventies, but they are definitely worth hearing. C.A.

**ARTHUR PRYSOCK: *A Rockin' Good Way*.** Arthur Prysock (vocals); Red Prysock Band (instrumentals). *Baby (You've Got What It Takes); I Want to Thank You, Girl; Bloodshot Eyes; Teach Me Tonight; Every Morning Baby; Passing Strangers; Next Time You See Me; A Rockin' Good Way.* MILESTONE M-9139 \$8.98.

Performance: *Mellow*  
Recording: *Very good*

Arthur Prysock is one of the most durable veterans of a bygone era, and the years have treated him well. While he once stood in the shadow of Billy Eckstine, whom he resembles in voice and appearance, he later came into his own with an abundance of recordings. This new set offers vintage interpretations of songs ideally suited to his warm personal approach.

Several selections strike a nostalgic response, especially *Teach Me Tonight*, which Prysock sings as though it had been written yesterday. There are some choice duets on *Baby (You've Got What It Takes)*, which was a hit for Dinah Washington and Brook Benton, and *Passing Strangers*, previously done by Sarah Vaughan and Eckstine. Prysock's partner on these tracks, Betty Joplin, is a virtual unknown, with a vocal style reminiscent of the young Nancy Wilson, and she complements Prysock with ease and grace.

Part of the nostalgic glow here is created by the instrumental accompaniment of tenor saxophonist Red Prysock (Arthur's brother) and his band. Al-

though a synthesizer sometimes replaces the sturdy old organ of yesteryear, the overall effect is true. The crew is at its best on bouncy, bluesy numbers like *Next Time You See Me* and *Bloodshot Eyes*, all guaranteed to take you back at least twenty years. P.G.

**LEE WILEY: *The Songs of George and Ira Gershwin and Cole Porter*.** Lee Wiley (vocals); the orchestras of Joe Bushkin and Max Kaminsky, with Fats Waller, Bunny Berigan, others. *How Long Has This Been Going On?; My One and Only; Sweet and Low Down; 'S Wonderful; I've Got a Crush on You; Someone to Watch Over Me;* and ten others. AUDIOPHILE Ⓜ AP-1 \$7.98.

Performance: *Not to be missed*  
Recording: *Smooth and mellow*

You can say one thing about the recording business today compared with fifty years ago: it's a lot easier for the most talented performers to get records made, if not by the best-known labels then at least by the myriad small independents around. In the Thirties, however, the handful of existing record companies limited their rosters to a few names. As a result, we have very small recorded legacies from such fine, distinctive singers, well-known to radio and club audiences, as Lee Wiley, Helen Morgan, Annette Hanshaw, Ilomay Bailey, and Shirley Ross.

Wiley, in particular, surely influenced more singers who straddled the jazz/pop line in the Thirties and Forties than just about any other white singer besides Mildred Bailey. Yet all that today's listeners have are some of Wiley's old radio shows (possibly pirated) that have turned up on discs in recent years to supplement a couple of LPs compiled from Columbia 78's. Now comes this gem, which anyone who cares about the art of the American popular song shouldn't be without.

The eight Gershwin and eight Porter songs here were originally recorded in 1939 and 1940, respectively, for two 78-rpm albums issued by New York City's Liberty Music Shops for its knowing clientele in an age when such independent ventures were rare indeed. Wiley's small back-up groups included some of the town's best jazz musicians—Fats Waller, Bunny Berigan, and Pee Wee Russell among them—who sat in without billing because of contractual conflicts with major companies. The arrangers, including Paul Wetstein (then with Tommy Dorsey but soon to go out on his own as Paul Weston), tailored each song to complement Wiley's alternately sultry and lightly swinging vocalism.

This latest LP transfer has generally quiet surfaces and ungimmicky sound, without the added echo and electronic "enhancement" that plague some reissues. The excellent liner notes include a marvelous essay on Wiley by singer-author Larry Carr and detailed information about the recording sessions and personnel. In all, a prize package.

Roy Henning

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**BEETHOVEN: Piano Concertos Nos. 3 and 4** (see Best of the Month, page 108)

**BELLINI: I Capuleti e i Montecchi.** Agnes Baltza (mezzo-soprano), Romeo; Edita Gruberova (soprano), Giulietta; Gwynne Howell (bass), Capellio; Dino Raffanti (tenor), Tebaldo; John Tomlinson (bass), Lorenzo. Chorus and Orchestra of the Royal Opera, Covent Garden, Riccardo Muti cond. ANGEL ● DSB-3969 two discs \$23.98, © 4D2S-3969 two cassettes \$23.98.

Performance: *Lyrical, graceful*  
Recording: *Clear, well balanced*

To characterize this performance of Bellini's treatment of the Romeo and Juliet story as "lyrical" and "graceful" might seem like a put-down, but it is not. Riccardo Muti and his assembled forces capture the composer's limpid, fluent melodic style, and their execution is accurate and expressive. The truth is, though, that the opera just doesn't have much dramatic thrust. It was written in only six weeks, using material borrowed from Bellini's earlier and unsuccessful opera *Zaira* and with a libretto relying heavily on the crude source from which Shakespeare drew his play. A tale of sweethearts, not passionate young lovers, *I Capuleti e i Montecchi* adheres to such a gentle level of intensity that what has been limpid becomes languid, and what has been tender turns melancholy. Yet the opera teems with seductive melodies that are beautifully sung and played here.

Agnes Baltza's voice, while not large, is well placed, clear, and expressive, and she captures the impetuosity of the boyish Romeo very well. Edita Gruberova is perhaps without rival in her chosen repertoire. Her pitch is pure, her voice has a shimmering silvery quality, her floratura is sure, and she produces effortless pianissimos that are truly ravishing. She brings to this paper-doll Juliet as much characterization as the libretto allows. Dino Raffanti's bright-voiced tenor sounds occasionally

## TACCHINO'S INSPIRED POULENC

**P**IANIST Gabriel Tacchino's happy identification with the music of Poulenc goes back to the very beginning of his career, and it has often been stunningly confirmed in his recordings. EMI/France has now released the fourth and final volume in Tacchino's survey of Poulenc's solo-piano works, and you may be sure that he takes nothing for granted in the music. There is no relaxation of the total commitment that has so vivified all of the previous volumes in the series, which Tacchino began in 1966.

The tiniest pieces here—such as the five *Impromptus*, with their faint pre-echoes of the *Double Concerto*, or *En bateau* and *En chemin de fer* among the *Promenades*—yield unexpected substance, and the three movements of the *Napoli* suite fairly blaze with the flush of inspiration that must have produced them. And, speaking of inspiration, what an inspired touch it was to save the deliciously warmhearted and exuberant *Bourée au pavillon d'Auvergne* for the final item on this disc, and in the series.

Why don't these pieces turn up on recital programs? Perhaps because no one else has Tacchino's singular affinity for them. But what a joy this whole series has been, particularly with the outstanding sonics the performances deserve. This final installment, Direct Metal Mastered, is simply one of the finest-sounding piano recordings you are likely to hear in any format. It is also one of the most appealing packages of music you are *not* likely to hear from any other source. *Richard Freed*



**POULENC: Feuilles d'album; Five Impromptus; Napoli; Promenades; Badingage; Bourée au pavillon d'Auvergne.** Gabriel Tacchino (piano). LA VOIX DE SON MAÎTRE/EMI ● 173196-1 \$12.98 (from International Book and Record Distributors, 40-11 24th St., Long Island City, NY 11101).

strained on the top; otherwise, he sings well and with conviction. Gwynne Howell and John Tomlinson, as Capellio and Lorenzo, respectively, acquit themselves commendably.

The chorus sings well too, and the Royal Opera House Orchestra reacts sympathetically to Bellini's long musical line, playing elegantly and with intensity. As we have come to expect of him, Muti has sure control of his forces yet allows the music its identity and the singers their style. *R.A.*

**BERIO: Sinfonia; Eindrückte.** Regis Pasquier (violin); New Swingle Singers; Orchestre National de France, Pierre Boulez cond. ERATO/RCA ● NUM 75198 \$10.98, © MCE 75198 \$10.98, © ECD 88158 no list price.

Performance: *Splendid*  
Recording: *Very good*

The original four-movement version of

Luciano Berio's *Sinfonia*, composed for the New York Philharmonic and recorded by that orchestra under the composer's direction just after its première in 1968, was an intriguing and provocative work, but it somehow left an impression of being unresolved. Berio advised that by the time the first recording was made, he was already sketching a fifth movement that would bring all the elements together. It has taken till now to get the completed work recorded, and the added finale does work; it has the effect, I think, of illuminating what has gone before in instantaneous retrospect.

The performance under Pierre Boulez is all one might hope for—enlivening, clarifying, intensifying—and yet not necessarily superior to Berio's own in the parts recorded earlier. In the long movement based on the scherzo of Mahler's Second Symphony (now quite literally the work's centerpiece), the

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words spoken by the tenor are so very clear, and thrust into such prominence by the recorded focus, that for a bit one almost has the feeling of a recitation with background music; in the earlier recording the speech fragments were gratifyingly *less* clear, blending in as part of the general musical effect rather than standing out from it. I don't want to overstate this particular effect, and overall I prefer the Boulez recording, not only for its being complete, but for the fine execution, the marvelously clear and (mostly) well-balanced recording, and the excellent choice of the previously unrecorded *Eindrücke* of 1974 as coupler.

*Eindrücke* would ordinarily be translated as *Impressions*, but what Berio had in mind, he has said, was *Traces*, because in this powerful ten-minute piece there are "traces" of *Bewegung* and *Still*, the two orchestral pieces that immediately preceded it. Personally, I find *Eindrücke* more than a "filler." To me it is an absorbing piece, more highly concentrated and certainly no less accessible than *Sinfonia*, in which the forces of a large orchestra are used in a straightforward but highly personal way. Overall, it is the intensity, more than any technical device, that gives the piece its character and its appeal. Highly recommended. R.F.

**BOCCHERINI: Cello Concerto in D Major (G. 479).** **VIVALDI: Concerto for Two Cellos in G Minor (RV. 531); Cello Concertos in B Minor (RV. 424) and G Major (RV. 413).** Yuli Turovsky, Alain Aubut (cellos); I Musici de Montréal, Yuli Turovsky cond. CHANDOS • ABRD 1145 \$12.98, © ABTD 1145 \$12.98.

Performance: *Robust*  
Recording: *Splendid*

Here is a feast of sturdy cello playing and robust Baroque performances. The same vigor that makes the Vivaldi concertos exciting is applied to the Boccherini concerto, giving it a masculine quality that it usually lacks. Under the direction of cello soloist Yuli Turovsky, I Musici de Montréal combines the joy of fine technique with the celebration of music. Recommended. S.L.

**CANTELOUBE: Chants d'Auvergne, Volume Two; Triptyque.** Frederica von Stade (mezzo-soprano); Royal Philharmonic Orchestra, Antonio de Almeida cond. CBS • IM 37837, © IMT 37837 no list price.

Performance: *Glowing*  
Recording: *Excellent*

My single reservation about this disc does not concern the performers' interpretations of the Auvergne songs but the composer's arrangements of them, which may suggest the sonorities of old instruments but are sometimes so highly sophisticated as to belie the folk quality of the lyrics. They are beautiful arrangements, nonetheless, and the intricate rhythms are delightful.



Frederica von Stade: a joy

There is in the songs themselves an affecting underlying melancholy that Frederica von Stade captures perfectly. Her limpid, golden voice, admirably handled, draws from each selection its full share of musical beauty and poetic meaning. She is a joy to listen to. Antonio de Almeida conducts sensitively and with more involvement than is sometimes characteristic of his work. The *Triptyque* that fills out the disc is a setting of three poems by Roger Fréne in praise of summer, moonlight, and dawn. They are performed with an utterly seductive tonal and stylistic voluptuousness. R.A.

**DVOŘÁK: String Quartet No. 11, in C major, Op. 61.** **MENDELSSOHN: Andante in E Major, Op. 81, No. 1; Scherzo in A Major, Op. 81, No. 2.** Mendelssohn String Quartet. MUSICMASTERS • MMD 20102H \$8.98.

Performance: *Fine Mendelssohn*  
Recording: *A bit cramped*

In late January I heard the gifted Mendelssohn String Quartet—Laurie Smukler, Nicholas Mann, Ira Weller, and Marcy Rosen—in a concert of Haydn, Schubert, and Ives in Blue Hill, Maine. Having also heard them last season playing Haydn, Mendelssohn, and Smetana, I asked myself, "When do we get a recording from these folks?" And lo, the very next day, this debut disc showed up in my review package.

Alas, neither the choice of the main work nor the quality of the recording matches what I have heard the group do in concert. Of the major Dvořák quartets, the C Major, for at least its first two movements, is the least obviously ingratiating. The two final movements are quite another matter, offering the amalgam of Slavonic flavoring and mainstream Romanticism combined with melodic invention that we associate with Dvořák.

The Mendelssohn Quartet's performance of the Dvořák piece is elegant and conscientious throughout, but it is in

the two Mendelssohn quartet movements, a gentle theme-and-variations and a lithesome scherzo, that the players do full honor to their group's namesake. Here is lyrical warmth, elegance, rhythmic address, and the sense of organic flow I remember from their concerts. Even what I feel to be an overly close microphone setup cannot hinder the communicative ardor of the playing. D.H.

**LALO: Symphonie espagnole, Op. 21.** **SARASATE: Zigeunerweisen, Op. 20.** Anne-Sophie Mutter (violin); Orchestre National de France, Seiji Ozawa cond. ANGEL • DS-38191 \$11.98, © 4DS-38191 \$11.98, © 47318-2 no list price.

Performance: *Songful*  
Recording: *Good*

The legendary Spanish violin virtuoso Pablo de Sarasate was the dedicatee of Lalo's *Symphonie espagnole* as well as the composer of the dazzling gypsy-style *Zigeunerweisen*. While Lalo work is not a profound masterpiece, it is surely the most substantial French contribution to the nineteenth-century repertoire for violin and orchestra. There is vivid Iberian coloration in three of its five movements, and a somber undercurrent in the dramatic intermezzo and slow movement seizes the attention.

It is to the intensely lyrical aspects of the *Symphonie espagnole* that Anne-Sophie Mutter seems to respond most convincingly. While technical hurdles present no problems for her, she lacks the panache of a Perlman or a Heifetz. Better she should stick to the Austro-German classics where her mastery remains peerless. Seiji Ozawa and the Orchestre National de France contribute solid support throughout. Balances favor the soloist, though not obtrusively so, and the sonics are full-bodied and pleasingly spacious. D.H.

**MAHLER: Symphony No. 4, in G Major.** Irmgard Seefried (soprano); Vienna Philharmonic Orchestra, Bruno Walter cond. VARÈSE SARABANDE • VCD 47228 no list price.

Performance: *Historic*  
Recording: *Not bad*

The 1945 New York Philharmonic recording of Mahler's Fourth Symphony conducted by the composer's friend and disciple Bruno Walter is a classic reading still available on LP, and the sound is good with or without stereo enhancement. This new CD offers us essentially the same reading, unique in its warmth and total command of structure, in an unenhanced mono recording of a live performance by the Vienna Philharmonic at the 1950 Salzburg Festival.

For me the main point of interest in this release, over and above its documentary value, is the chance to hear Irmgard Seefried, one of the finest operatic and lieder singers of her generation, in the last-movement soprano solo, "Die himmlische Freuden." To the best of my knowledge, this is the only com-

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mercially available recording of Seefried as a Mahler interpreter. Where Desi Halban in Walter's New York Philharmonic recording is very much the naïve little girl, Seefried sings the role as a mature woman, telling a delectable fairy tale with great warmth, tenderness, and impeccable enunciation.

The sound is not quite as good as that achieved in the 1945 recording, made in Carnegie Hall under controlled conditions rather than in a live performance, and I don't feel that the Vienna Philharmonic in 1950 had quite regained its prewar burnished tonal quality, let alone the polish it now possesses. But there is a definite advantage in having Walter's Mahler reading uninterrupted on CD, and Seefried's lovely soprano is certainly worth hearing. *D.H.*

**MENDELSSOHN:** *Andante in E Major, Op. 81, No. 1; Scherzo in A Major, Op. 81, No. 2* (see DVORÁK)

**MONTEVERDI:** *Orfeo*. Gino Quilico (baritone), Orfeo; Audrey Michael (soprano), Euridice, La Speranza, and Eco; Colette Alliot-Lugaz (soprano), La Musica; Carolyn Watkinson (contralto), La Messaggiera; Eric Tappy (tenor), Apollo; Guy de Mey (tenor) and François le Roux (baritone), Pastori; Frangiskos Voutsinos (bass), Pluto; others. Ensemble Vocal de la Chapelle Royale; Orchestre de l'Opera de Lyon, Michel Corboz cond. ERATO/RCA • NUM 75212 two discs \$21.96, © MCE 75212 two cassettes \$21.96, © ECD 88133 two CD's no list price.

Performance: *Vital*  
Recording: *Excellent*

So many performances of Monteverdi's *Orfeo* sound like reconstructions. No matter how beautifully performed, they still seem to be motivated more by musicology than by musical drama. This one, however, conducted by Michel Corboz for stage performances at the festival at Aix-en-Provence in France last summer, brings out, like no other, the truly operatic qualities of the score. The singing is robust and full throated, and the performers attain a real dramatic thrust in their superb diction and projection of the poetry. From the opening words of La Musica to the final appearance of Apollo, the air is charged with drama.

The show really belongs to Gino Quilico as the omnipresent Orfeo. His fresh young baritone and superb artistry take us through Orfeo's initial ecstatic joy to the double tragedy of losing his bride a second time. If Quilico struggles a bit with the convolutions of "*Possente spirito*," his projection of the role far exceeds any vocal problems that arise from singing Monteverdi in a full operatic voice. The same is true of the fine work of the many supporting singers.

Using a combination of modern and early instruments and a marvelous-sounding continuo of lutes, chitarrones, theorbos, guitars, harp, organ, and harpsichord, Corboz evokes a convincing



Simon Rattle: conviction and intensity

authentic sound. But the authenticity never interferes with his dramatic pacing, which keeps this performance firmly on the operatic stage as a living experience. Purists will have bones to pick, of course, but opera buffs will be delighted to hear this masterpiece treated for what it is: opera. *S.L.*

**NIELSEN:** *Symphony No. 4, Op. 29 ("The Inextinguishable"); Pan and Syrinx, Op. 49*. City of Birmingham Symphony Orchestra, Simon Rattle cond. ANGEL • DS-38237 \$11.98, © 4DS-38237 \$11.98.

Performance: *Intense*  
Recording: *Superb*

Simon Rattle's fascinating new reading of Nielsen's Fourth Symphony opens in a more deliberate way than most others. Instead of hurling the listener into tonal turmoil, Rattle lets you gain your bearings, and as the first movement proceeds there is more of a sense of grandeur than of the usual near-manic conflict. The result of this approach is to place the idyllic second movement in a more meaningful perspective, so it does not seem a letdown between the dramatic opening movement and the highly charged second half of the work.

"Searing" is the only word to describe Rattle's attack in the great violin passage that opens the adagio third movement, and his workup of the woodwind chant figure in the second half is overwhelming in its cumulative power. The lead-in to the finale goes like lightning, and the famous timpani duel, superbly recorded here, is a true blockbuster. What I look for most, however, in performances of this movement is the great A Major outburst midway through—like sun in the midst of a thunderstorm—followed by the hushed canon for strings leading to the cataclysmic final pages. Rattle brings it all off magnificently in this recording.

By way of prelude to the symphony, this album offers a magical performance of Nielsen's imaginative, humorous little tone poem based on the Pan and Syrinx legend. In both works the playing by the Birmingham (England) orchestra is distinguished by the utmost conviction and intensity, and the recorded sound is astonishingly vivid throughout. *D.H.*

**SARASATE:** *Zigeunerweisen* (see LALO)

**SCHOENBERG:** *Cello Concerto in D Major* (see R. STRAUSS)

**ROSSINI:** *Il viaggio a Reims* (see Best of the Month, page 107)

**SCHUMANN:** *Dichterliebe, Op. 48; Liederkreis, Op. 24; Der arme Peter, Op. 53, No. 3; Myrten, Op. 25, Nos. 7, 21, and 24; Dein Angesicht, Op. 127, No. 2*. Hermann Prey (baritone); Leonard Hokanson (piano). DENON © 35C37-7720 no list price.

Performance: *Distinguished*  
Recording: *Excellent*

It was a fine idea and, in the event, a superbly realized one to have Hermann Prey fill a Compact Disc nearly to capacity with Schumann's settings of Heine verses. The Op. 24 *Liederkreis* gets much less circulation, in the recital room as well as on records, than the Op. 39 cycle of the same title on verses by Eichendorff, and the set of three *Der arme Peter* songs have been even more neglected. The latter, in fact, may well represent a discovery for many listeners, and how fortunate they are to be introduced to it by such sympathetic and committed artists as Prey and Leonard Hokanson. It is not so much authority one senses as what might be called "total immersion" in the particular song-world of Schumann and Heine.

Prey still commands a surprisingly youthful flexibility of voice and the ability to evoke the deepest poignancy with a freedom from histrionics. The meanings of the words are obviously as important to him as the music, and every subtle undercurrent of irony or joy or bitterness or nostalgia is superbly caught and projected. There is really little one can say about performances on this level except that they are treasurable to the connoisseur and have the power to convert the most steadfast hold-outs into enthusiastic devotees of German *Lieder*. *R.F.*

**SCHUMANN:** *Symphony No. 1, in B-flat Major, Op. 38 ("Spring"); Symphony No. 4, in D Minor, Op. 120*. Vienna Philharmonic Orchestra, Leonard Bernstein cond. DEUTSCHE GRAMMOPHON • 415 272-1 \$10.98, © 415 272-4 \$10.98, © 415 272-2 no list price.

Performance: *Mixed*  
Recording: *Very good*

My favorite in the Schumann sympho-



ny cycle that Leonard Bernstein recorded for Columbia in the early Sixties has remained the *Spring* symphony, which was performed with just the right amalgam of Romantic solemnity and youthful impetuosity. Deutsche Grammophon has now released the first installment in a new Bernstein Schumann cycle recorded live with the Vienna Philharmonic, and again, of the two works here, I prefer the *Spring* Symphony. The opening summons of the first movement sounds forth even more broadly than in the 1964 recording, but the balance of the movement is endowed with the same infectious exuberance. The slow movement is warm in sentiment without becoming cloying, and the forthright scherzo leads to a lithesome finale.

Bernstein's performance of the D Minor Symphony, however, seems lacking in drive through most of the first movement, and the pacing is generally on the heavy side. The slow movement is handled rather freely in terms of small tempo fluctuations, not always to the musician's advantage. Matters improve with a well-paced scherzo and finale. As in the *Spring* Symphony, exposition repeats are taken in the first and last movements.

I find more polish and sureness, too, in the Vienna Philharmonic's playing of the *Spring* Symphony than in the D

Minor, where an audibly premature violin entrance mars the start of the final dash for home in the coda of the finale. The sound throughout is rich and detailed, though, making for an extraordinarily transparent orchestral texture. *D.H.*

**R. STRAUSS: *Don Quixote, Op. 35.***  
**SCHOENBERG: *Cello Concerto in D Major.*** Yo-Yo Ma (cello); Malcolm Lowe (violin); Burton Lane (viola); Boston Symphony Orchestra, Seiji Ozawa cond. CBS • IM 38963, © IMT 38963, © MK 38963, no list price.

Performance: *Lyrical*  
Recording: *Superb*

While the other five early Strauss tone poems have been getting plenty of attention on CD's recently, *Don Quixote*, the most humane and compassionate of the lot, has had to wait until now even for a digitally mastered LP. Another notable aspect of this release is that it appears to be the Boston Symphony's first recording for CBS since the Thirties.

The usual performance time for Strauss's *Fantastic Variations on a Theme of Knightly Character*, as the work is subtitled, averages around forty minutes. Yo-Yo Ma and Seiji Ozawa here take an additional five minutes to let the hero wend his eerily mad way

from his joust with the windmills in Variation I to his final pathetic defeat and touching farewell. The barbed satire in the score takes a back seat in this performance to lyricism and nostalgia.

Redoubtable virtuoso and musician that he is, Ma plays ravishingly in the lyrical variations and does a superb job of characterization in depicting the poor Don picking himself up from the mud after his charge against the windmills. In terms of tone painting, the ride through the air in Variation VII is most impressive for sheer weight of sound and the wonderful wind-machine effects, and the bleating sheep in Variation II are extraordinarily vivid. The engineering, by Telarc's Jack Renner, is right on a par with the best that Telarc itself has done in Boston's Symphony Hall.

The filler piece is a curiosity, the last music that Arnold Schoenberg worked on in Europe before exiling himself to the U.S. (the première was in London in 1935). It is an elaboration for cello and orchestra of a harpsichord concerto by the pre-Classical Viennese composer Matthias Georg Monn. I don't find the solo-cello part particularly grateful, but in some respects Schoenberg's scoring is delightfully outrageous, with a xylophone, bass drum, snare drum, and what have you. Flying in the face of our current fad for "authenticity" in per-

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The New York Vocal Arts Ensemble

WHEN the phonograph replaced the piano as the principal source of music in American homes, a large repertoire of parlor music fell into disuse. It included traditional songs like *The Last Rose of Summer* and those written by such composers as Stephen Foster and Henry Clay Work for home performance. They were often arranged as solos, duets, or quartets with accompaniment by piano and whatever other instruments might be at hand.

The New York Vocal Arts Ensemble's new recital "Listen to the Mocking Bird," their first recording on the Arabesque label, makes this music sound so appealing that its long neglect is hard to understand. The well-chosen program includes such familiar items as the title song and *Home! Sweet Home!* as well as things like *Crossing the Grand Sierras* and the amusing *Horticultural Wife*, which I had never heard before.

All are performed here by a quartet of young singers with attractive voices accompanied principally by artistic director Raymond Beegle at the piano. The arrangements, which also call for flute, cello, and harp, are either the original ones or the earliest that could be found, and the effect is one of considerable charm as well as period authenticity.

The New York Vocal Arts Ensemble was formed in the early 1970's not for this particular repertoire in English but to help revive vocal chamber music of all periods, and their specialty is the vocal-quartet literature of the great European Romantic composers. To this album they bring the same sincerity, respect, and musicianship they would lavish on music of Schubert, Mendelssohn, or Brahms. Just as there is here no hint of parody or exaggerated senti-

ment, which would quickly reduce these songs to tiresome campiness, neither is there any effort to magnify their artistic importance. This is music designed to give simple pleasure, and the approach of the performers is, I think, exactly right. Their haunting rendition of *Listen to the Mocking Bird*, which Beegle's liner notes describe as Abraham Lincoln's favorite song, is particularly memorable.

Technically the album is impeccable. Digital recording captures well the freshness and beauty of the young singers' voices. This is music that could easily be performed in average-sized listening rooms, and close microphone placement contributes to the illusion that the artists are right there in the room with you. The album was mastered and pressed in Germany, and its silent surfaces indicate that there's a lot of life in the LP yet. The Compact Disc, not yet available at press time, should sound fabulous. *William Livingstone*

**NEW YORK VOCAL ARTS ENSEMBLE:** *Listen to the Mocking Bird. She's the Sweetest of Them All; The Kerry Dance; The Horticultural Wife; Home! Sweet Home!; Crossing the Grand Sierras; I Wonder Who's Kissing Her Now; The "Rag Time Dance"; Listen to the Mocking Bird; Some Folks; The Last Rose of Summer; I Took Her to the Ball; The Ash Grove; My Old Kentucky Home, Good-Night!* Lise Messier (soprano); Mary Ann Hart (mezzo-soprano); Gregory Mercer (tenor); Paul Rowe (baritone); Katherine Hoover (flute); Barbara Chapman (harp); Theodore Mook (cello); Raymond Beegle (piano). ARABESQUE ◊ ABQ 6555 \$10.98, ◊ ABQC 6555 \$10.98, ◊ Z 6555 no list price.

formances of early music, the work is odd but fascinating, and this reading is certainly a vital one. *D.H.*

**R. STRAUSS:** *Ein Heldenleben, Op. 40.* Cleveland Orchestra, Vladimir Ashkenazy cond. LONDON ◊ 414 292-1 \$10.98, ◊ 414 292-4 \$10.98, ◊ 414 292-2 no list price.

Performance: *Beautiful*  
Recording: *Gorgeous*

Vladimir Ashkenazy shuns extrovert bombast and heavyhanded Teutonic introspection in his reading of Richard Strauss's autobiographical tone poem. Instead, he makes the most of the music's many fine lyrical pages. The portrait of the Hero at the opening is swiftly limned, and it is with the entrance of the "Helpmate," delectably portrayed by concertmaster Daniel Majeske, that the performance begins to take on shape and character, working up to a splendidly lush climax before the transition to the battle scene. The battle scene is prefaced by a flawlessly placed offstage fanfare and pursues its course with almost Kodachrome clarity. The final pages, with violin and horn set against a glowing orchestral background, are richly fulfilling.

There may have been more exciting and searching readings of *Ein Heldenleben* on record but seldom any as sensuously beautiful as this. *D.H.*

**TCHAIKOVSKY:** *Symphony No. 5, in E Minor, Op. 64; Voyevode, Op. 78.* Chicago Symphony Orchestra, Claudio Abbado cond. CBS ◊ IM 42094, ◊ IMT 42094, ◊ MK 42094, no list price.

Performance: *Swift, no-nonsense*  
Recording: *Very good*

As in his 1972 recording with the London Symphony (still listed in Schwann), Claudio Abbado takes a clear-eyed, no-nonsense approach in his new recording of the Tchaikovsky Fifth, and this one benefits from fine digital sound. There is an Italianate volatility to the performance that suggests how Toscanini might have played the work if he had ever included it in his repertoire. Doubtless some will feel that the pacing of the slow movement and the finale is on the fast side, but others will welcome a Tchaikovsky free of sentimental hand-wringing.

The symphony is coupled with the rarely heard and even more rarely recorded symphonic ballad *Voyevode*, composed while Tchaikovsky was working on the opera *Yolanta* and the *Nutcracker* ballet. Based on Pushkin's translation of a Polish ballad, *Voyevode* deals with illicit love, jealousy, and murder. The music offers more gesture (a persistent galloping motif) than substance, but the performance is as good as we are likely to hear on or off records. *D.H.*

**VIVALDI:** *Concerto for Two Cellos in G Minor; Cello Concertos in B Minor and G Major* (see BOCCHERINI)

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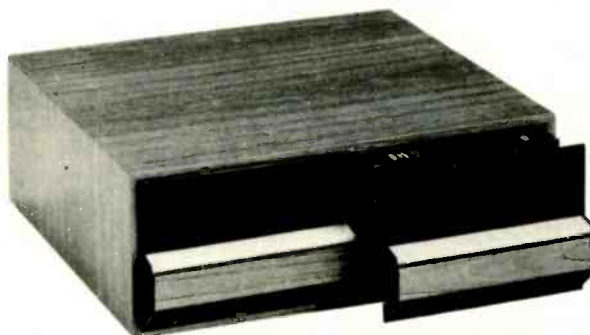
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### Savoy Video Cassette Storage System

This is Savoy model #782 video cassette storage system. This unit will hold 24 Beta or VHS cassettes, 12 in each drawer. The Savoy #782 is currently being sold at most department store chains and video stores. Savoy customer service number is 1-800-343-8140.



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*Discs and tapes reviewed by*  
**Robert Ackart**  
**Chris Albertson**  
**Louis Meredith**  
**Alanna Nash**

**BLUES ALIVE.** John Mayall's Original Bluesbreakers; John McVie, Albert King, Etta James, Buddy Guy, Sippie Wallace, Junior Wells (vocals); others. *The Dark Side of Midnight; C. C. Rider; Baby What Ya Want Me to Do; Call It Stormy Monday; Room to Move; Don't Start Me Talkin'*; and eight others. PIONEER PA-85-143 LaserDisc \$24.95.

Performance: *Earthy*  
 Recording: *Very good*

The sound of popular music is ever changing, but some things never change, and with apologies to Gertrude Stein, a blues is a blues is a blues. There are many shades of blues, though, and quite a few were evident at the Capitol Theatre in Newark, New Jersey, on a June night in 1982. That was a tour stop for John Mayall's Bluesbreakers, a group of white musicians who made their mark in the rock world, and they were joined for the occasion by some prominent black guests of the very purest blues lineage.

Despite rough spots here and there, "Blues Alive" is on the whole a satisfying set. Of the guests, Buddy Guy and Junior Wells are the most genuinely spirited. Albert King is wonderful as he renders *Born Under a Bad Sign*, the song that originally established him. Etta James is a bit too forceful, and Sippie Wallace, who made superb recordings in the Twenties (sometimes accompanied by a fiery, young Louis Armstrong), is still delightful as she approaches eighty-five. Since music of this kind rarely appears on videodiscs, this LaserDisc from Pioneer is especially welcome, and the stereo audio track is very good indeed. C.A.

**PLACIDO DOMINGO: *Placido.*** Placido Domingo (tenor). KULTUR 1119 VHS Hi-Fi and Beta Hi-Fi \$39.95.

Performance: *Ingratating*  
 Recording: *Satisfactory*

This video cassette, subtitled "A Year in the Life of Placido Domingo," does indeed show the tenor to be ingratiating—warm, outgoing, and humble. Humble! Indeed, Uriah Heep could not have been more 'umble. We are allowed glimpses of the singer in various roles, but no segment is ever brought to its musical conclusion. And we have vignettes of Domingo learning new parts, Domingo the family man, Domingo

## TOWNSHEND'S VISION

**P**ETE TOWNSHEND'S *White City* is one of those multimedia packages much beloved by the entertainment industry these days: See the movie! Buy the book! Buy the record! Buy the lunch box! But don't hold that against it, especially Vestron's "Music Movie" version, because it's rather interesting stuff. Townshend, still the Thinking Man's Rock Star, has here concocted another of his meditations on the Decline of the Empire, the British class system, the generation gap, and the meaning of rock-and-roll. If it reminds you of his earlier *Quadrophenia*, that's probably not accidental, and while *White City* is far less ambitious, it is intelligent, often moving, and quite obviously Townshend's own.

The story is slight. Townshend plays a minor-league rock star who returns to his old neighborhood, the White City (a real-life English housing project and obviously a metaphor). There he encounters two friends who stayed behind: Jim, played by Andrew Wilde, who looks like a degenerate Alexander Goudonov, and his ex-wife Alice, played by Francis Barber, a radiantly real actress. In short, boy meets girl, boy loses girl, boy gets girl back. But Townshend fleshes out this familiar material with sharply observed character vignettes, elegantly shot and at times surreal flashbacks, and musical numbers that comment, fairly cleverly, on the action. It may not be epochal drama, but as a kitchen-sink realist mood piece it succeeds rather nicely. If Townshend isn't careful, he may be remembered one day not as the architect of one of the greatest rock bands ever but as a less-angry Sixties version of John Osborne.

greeting royalty, Domingo acknowledging applause (thunderous, of course), Domingo being idolized by Hollywood celebrities, and Domingo at play. This elaborate publicity gimmick would be worth the 105 minutes required to watch it if Domingo were allowed to reveal anything of real significance about his art. He is not. It is all very pat and superficial, and in the long run it seems merely self-serving. Still, somehow the tenor emerges from it all as an attractive and likable fellow. R.A.

**JOHN LENNON: *Live in New York City.*** John Lennon (vocals, guitar); Yoko Ono (vocals, keyboards); Elephant's Memory (vocals and instrumentals). *Power to the People; New York City; It's So Hard; Woman Is the Nigger of the World; Sisters Oh; Well Well Well; Instant Karma; Mother;* and



All in all, *White City* is the kind of highly personal, nonlinear, avant-garde film that used to be the province of Hollywood mavericks like John Cassavetes. How odd to find it (like Ray Davies's generically similar *Return to Waterloo*) now the province of musicians looking to branch out. Definitely worth a look, and Vestron's hi-fi soundtrack on cassette and the CX-encoded stereo on LaserDisc are satisfactorily vivid.

Louis Meredith

**PETE TOWNSHEND: *White City—The Music Movie.*** With Pete Townshend, Andrew Wilde, Francis Barber. VESTRON MA-1025 VHS Hi-Fi \$29.95, MB-1025 Beta Hi-Fi \$29.98, VL-1025 LaserDisc \$34.95.

six others. SONY 96W50128 VHS Hi-Fi \$29.95, 96W00127 Beta Hi-Fi \$29.95.

Performance: *Fascinating*  
 Recording: *Eccentric*

As the only extant full-length, post-Beatles performance document of John Winston Lennon, rocker *extraordinaire*, this video perhaps generated unreasonable expectations when its release was announced. Shot at a 1972 benefit concert, it catches Lennon at the height of his explicitly political period, which, from all accounts, was not a happy time for him. What we see here, in fact, is an artist who is noticeably angry about something, though whether it's his immigration status, his marriage, the role of women in society, the Vietnam war, or his declining commercial prospects remains unclear.

Musically it is an extremely uneven

package. The major revelation (if that is the word) is Elephant's Memory, the back-up group. At the time, they had parlayed their association with the ex-Beatle into a still-surviving reputation as a quintessential hard-rock outfit, a sort of fire-breathing Greenwich Village equivalent of the Band. Unfortunately, what becomes obvious within the first few minutes of this program is that, in fact, they were utterly mediocre—a rancid bunch of burnt-out hippies who couldn't have cut it doing Top-40 covers at a Jersey Shore bar, let alone at Madison Square Garden, where this was filmed. Long on cliché licks, they are almost painful to observe.

John, on the other hand, simply reeks presence and raw talent, although in this company even Sonny Bono would have looked good. He sings and plays with passionate commitment (*Come Together, Mother, Well Well Well*), he chews gum with more panache than any rock star in memory, and the camera clearly loves him. Ignore, if you can, the routine direction, the intrusive presence of Yoko Ono (whose piano work, when audible, is unlikely to give Linda McCartney the jitters), and a somewhat eccentric audio mix, and what you get is an utterly fascinating glimpse of a genuine pop genius/primitive, a man who obviously would have made his mark on the Sixties in some form even if he hadn't hooked up with three ideal collaborators in Liverpool. This is hardly one of the classic rock concert videos, but it makes for remarkable viewing nonetheless. *L.M.*

**MOZART: *Così fan tutte*.** Helena Döse (soprano), Fiordiligi, Sylvia Lindenstrand (mezzo-soprano), Dorabella; Danièle Perriers (soprano), Despina; Anson Austin (tenor), Ferrando; Thomas Allen (baritone), Guglielmo; Franz Petri (baritone), Don Alfonso. Glyndebourne Festival Chorus; London Philharmonic Orchestra, John Pritchard cond. VIDEO ARTS INTERNATIONAL 69024 VHS Hi-Fi \$69.95, 29024 Beta Hi-Fi \$69.95.

Performance: *Lackluster*  
Recording: *Good*

This videocassette of the 1975 Glyndebourne Festival production of Mozart's sparkling comedy is a no-nonsense affair, which is a pity. Despite a current trend to embellish it with Freudian interpretations, the opera is supreme nonsense that should be enjoyed as a masquerade. But there is not much laughter here. The singing is accurate enough but unexciting, with the notable exception of Helene Döse in Fiordiligi's second long aria, and there is no sense of Mozart's ironic commentaries on the music of his contemporaries. On the credit side, however, is John Pritchard's conducting, which is precise and well paced. *R.A.*

**OLIVIA NEWTON-JOHN: *Soul Kiss*.** Olivia Newton-John (vocals); vocal and instrumental accompaniment. *Soul*



HELMUT NEWTON/AICA HOME VIDEO

*Newton-John: hot-blooded*

*Kiss; Culture Shock; Emotional Tangle; Toughen Up; The Right Moment.* MCA 80346 VHS Hi-Fi and Beta Hi-Fi \$19.95.

Performance: *Kinkyfied*  
Recording: *Excellent*

Olivia Newton-John has always been a much better pop singer than she's gotten credit for, largely because her girl-next-door image obscured the notion that there might be some real sensibility there. Through the years, that implied wholesomeness has become a bit shopworn, too, a problem Newton-John apparently hopes to eliminate by turning hot-blooded on her new video.

Three of the five segments here—*Soul Kiss, Culture Shock,* and *Toughen Up*—attempt to show that our Livvy has gotten more than just physical. She seems to have developed a taste for the more, well, nefarious arts. In the video for the title song, she comes across looking kinkier than the glass-boothed Nastassia Kinski in *Paris, Texas*, writhing around on a red satin bed à la Marilyn Monroe—albeit clothed—in her famous calendar shot. In *Toughen Up*, she takes riding crop in hand to teach the innocents of a posh girls' boarding school how to get tough with their men. And in *Culture Shock*, she asks her boy friend if her lover can move in, intoning, "Why can't the three of us live together?" Of course, it's all in fun. Just when things get their steamiest in *Soul Kiss*, we're treated to grainy restagings of famous movies kisses. And to tone down the decadent sexual sparks in *Toughen Up*, director David Mallet turns the man-hating fantasy segments into goofy cartoon comedy.

All five videos here have their moments—more tease than sleaze—but instead of serving to present Newton-John as a mature and serious pop stylist, they reinforce her lightweight persona. At \$19.95, though, the price is right, I suppose. *A.N.*

## HEADPHONES

*Continued from page 98*

speakers, it's important to bring your own music, whether on LP, CD, or cassette. If you're buying your first pair of headphones you may be amazed at the amount of detail you'll hear in sources you thought were familiar.

When you think you have made your choice, leave your preferred phones on for at least five minutes to check their fit and comfort. If you plan to wear them for jogging, you'll have to suffer the mild embarrassment of running around in the store to see if they'll stay on.

While playing music with both strong bass and high-treble content, move the headphones around slightly and vary the horizontal pressure, noting how much the sound changes. Different models vary widely in their sensitivity to position and pressure. If a pair of phones sounds good only when you're pressing them to your ears with your hands, they won't do.

While you don't have to audition headphones in your own listening room as you do with loudspeakers, it is very important to try them with your own associated equipment. Are the connectors compatible? Small open-air headphones have miniature stereo plugs, though usually there's an adaptor for the larger 1/4-inch plug, requiring an adaptor for portable use.

Unfortunately, even with the right connectors all may not be well. There is no such thing as a "standard" headphone driver circuit, and receivers, preamplifiers, and cassette players differ widely in their ability to match the impedances and sensitivities of different headphones. Some outputs may be loaded incorrectly by low-impedance phones, resulting in weak bass or audible distortion at high levels. Circuits that sound fine with low-sensitivity headphones may be too noisy at the low volume settings required for high-sensitivity models. Even some very expensive portable cassette decks have this problem. If you'll be using the headphones mainly at home, make sure you can return them if they don't work properly with your system.

Finally, one word of warning about your new headphones: they can play havoc with your schedule. After you bring them home, you may well find yourself listening to your record and tape collection all over again just for the new things you can hear in it! □

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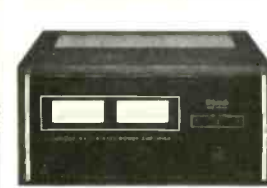
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JUNE



by *Christie Barter*  
& *Steve Simels*

**T**HE clarinetist **Richard Stoltzman**, forty-three, is the first wind player to receive the prestigious **Avery Fisher Prize**. It was awarded to him this season at a gala concert celebrating the tenth anniversary of the prize and the eightieth birthday of the man who donated the funds to make it possible, **Avery Fisher**, an audio-equipment manufacturer turned philanthropist.

Performers at the concert



*Stoltzman (left) and Fisher*

were the seven previous winners of the **Avery Fisher Prize**: violinist **Elmar Oliveira**, cellists **Lynn Harrell** and **Yo-Yo Ma**, and pianists **Emanuel Ax**, **Richard Goode**, **Horacio Gutierrez**, and **Murray Perahia**. It took place, fittingly, at **Avery Fisher Hall** at **Lincoln Center** in **New York**.

**Stoltzman** collaborated with **Goode** in an **RCA** recording of **Brahms's** two clarinet sonatas, which won a **Grammy Award** in **1983**. More recently **Stoltzman** has been dabbling in jazz fusion. His album "**Begin Sweet World**" is featured in **RCA's** new **Skylark** series. □

**T**HE worlds of art and music continue to overlap in such events as the recent **Art Aid** auction to raise money for **African famine relief**. Supervised by **Sotheby's**, the auc-



*Dylan: on the move*

tion was held at the **Hard Rock Café** in **New York City**. Among the donated works to be sold were various paintings, photographs, and sculptures of such musicians as **Paul McCartney**, **John Lennon** and **Yoko Ono**, **Chuck Berry**, and **Elvis Presley** as well as several works by other musicians who are also painters. All told, the auction raised **\$400,000**. A self-portrait by **Joni Mitchell** went for **\$3,700**, and a charcoal sketch by **Bob Dylan** brought **\$4,200**. □

**S**UCH a flurry of **Bob Dylan** activity lately! First, the formerly enigmatic minstrel teamed up with noted fans **Tom Petty** and the **Heartbreakers** for a tour of **Australia**, where one reviewer said ecstatically, "Close your eyes and it was like the **Sunset Strip** in **1965**, watching the newly electric **Dylan** backed by the **Byrds!**" Then **Columbia's** magnificent retrospective set, "**Biograph**," was released. And now comes word that **Dylan** and **Petty** enjoyed collaborating **Down Under** so much that they're bringing the show to these shores.

What's next? **Dylan**, who recently told *Entertainment Tonight* that twenty years ago he didn't even expect to be here now, is not saying. We won't venture to guess, but we do know there'll be an **HBO** special of the **Australian** shows, some of which featured **Mark Knopfler** and **Stevie Nicks**, and probably a home video version too. □

**N**OW that punk-rock standard bearers **The Clash** have split into two less than cordial (and less than memorable) factions, it's worth recalling that in their late-Seventies heyday **Joe Strummer**, **Paul Simonon**, **Mick Jones**, and **Topper Headon** formed one of the most charismatic bands ever to tread the boards. But don't take our word for it. Instead, check out "**This Is Video Clash!**" Just released by **CBS/Fox**, the thirty-one-minute collection of **Clash** videos, most of them concert clips, includes incendiary performances of *London Calling*, *The Call Up*, and the previously suppressed *Tommy Gun*. If there's been a better synthesis of agit-prop, loud guitars, and old-fashioned glamorous rock-and-roll image-mongering, we haven't seen it. A steal at **\$19.95**. □

**O**NE of **Leonard Bernstein's** major roles in **American musical life** has been that of an educator, mostly through the medium of television, and he's returning to the air in a three-part **PBS** series titled *Bernstein on Brahms*, beginning **Friday, May 23**. In the initial program **Bernstein's** subjects are the *Academic Festival Over-*

ture and the *Serenade in A Major*, and in those that follow he will be dealing with the *Violin Concerto* (**May 30**) and the *First Symphony* (**June 6**). . . . Later this month **PBS** is scheduled to broadcast a performance of **Stephen Sondheim's** *Sunday*



*Patinkin and Peters: on TV*

in the *Park with George*, videotaped at the **Booth Theatre** just before it ended its **Broadway** run there toward the end of last year. Featured are the show's original stars, **Bernadette Peters** and **Mandy Patinkin**. The original-cast recording is on **RCA**. . . . On **May 25** **Columbia Records'** **Neil Diamond** stars in his first television special in nine years, *Neil Diamond—Hello Again*. The **CBS** Network show features guest appearances by **Carol Burnett** and **Stevie Wonder**. □

**T**HE **U.S. Army's** daily newspaper, *Stars and Stripes*, recently polled its readership of servicemen and

*Strummer, Simonon, Jones, and Headon of the Clash*



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their families stationed in Europe for their musical favorites. **Bruce Springsteen's** "Born in the U.S.A." was the album they liked best. **Dire Straits' Money for Nothing** was their favorite single and **a-ha** their favorite new act. **Madonna** scored as the top female performer. □

**I**T'S hard to maintain the stereotype view of opera singers as corseted, old-fashioned fat ladies when you look at sopranos **Teresa Stratas** and **Julia Migenes-Johnson**. Slender and sexy, both are skilled singing actresses who have reached the top of their profession in the opera world and have also branched out into other areas of show business.

There are various parallels in their careers. They have

starred with great success in major operatic films—Stratas in Franco Zeffirelli's version of Verdi's *La Traviata* and Migenes-Johnson in Francesco Rosi's film of Bizet's *Carmen*.

Now Migenes-Johnson and Stratas are reaching out for what might be called an increased audience share. Migenes-Johnson has recorded an album of pop classics for RCA under the title "In Love" (reviewed on page 114), and she recently appeared as a rock singer in a French film called *L'Unique*.

Stratas will soon be headlining in a Broadway musical called *Rags* with music by Charles Strouse and lyrics by Stephen Schwartz. The show opens at the Mark Hellinger Theater in New York in August. For Nonesuch, Stratas has recorded an album of hit songs from the German, French, and American musicals of Kurt Weill. It is scheduled for release in September. □

**A**ir Supply's **Russell Hitchcock**, who recently married a flight attendant, takes a fairly practical view of his new status. "In show business," he says, "it pays to have someone around who can show you where the exits are." □

Hitchcock and his partner, **Graham Russell**, were busy recording their new Arista album in Los Angeles last month under the professional eye of Bernard Edwards, pro-



Russell and Hitchcock of Air Supply

ducer of Power Station, Robert Palmer, and Duran Duran. Playing on the album (untitled at press time) is Power Station drummer **Tony Thompson**, guitarist **Eddie Martinez** (noted for his work with Mick Jagger), and keyboardist **Jeff Bova**.

According to Hitchcock, the new Air Supply album will merge the group's trademark sound with "some exciting new textures." □

**T**HE follow-up to **Spyro Gyra's** recent hit album, "Alternating Currents," is due from MCA Records this month. Tentatively titled "Break Out," the new album enlists the services of the group's newest player, **Manolo Badrena**, who was previously Weather Report's percussionist. The album also features Synclavier programming by **Eddie Jobson**, an alumnus of Roxy Music.

Spyro Gyra's founder, saxophonist **Jay Beckenstein**, speaks of the advantages of recording in the group's own studio in suburban New York: "If you want craziness, then record in Manhattan. But our place has got everything that the best studios in Manhattan have, and it's also got a beautiful farm, a swimming pool, and a really gorgeous atmosphere. We can't give 'em sushi at 3:00 a.m., but other than that . . ." □

**W**HO says Beatlemania is dead? Certainly not the people at Sony Video. Their recent "John Lennon Live in New York City" has just be-

come the first music video ever to "ship Gold," with enough advance orders to certify Gold status even before it reached the stores. Whether the Capitol soundtrack LP will do as well remains an open question at this point, but according to industry insiders, one result of continuing commercial interest in John Lennon will be a rush to settle the licensing snafus that have prevented release of the Beatles' catalog on CD. We are also informed that when these CD's finally materialize, they will conform to the British LP configurations, which will thus become the de facto international standard—sort of like a



Beckenstein of Spyro Gyra

Merseybeat equivalent of the Mozart Köchel listings. Also expect a Pioneer LaserDisc version of the Lennon concert tape momentarily. □

**R**ACENOTES: **Richard Clayderman**, the cocktail pianist and CBS recording artist whom some have dubbed the Yuppie Liberace, was recently named Romantic Man of the Year by *Romantic Times* magazine. . . . Noted without comment: New World Video's *Godzilla 1985*, the film that marks the return of everybody's favorite Japanese man in a monster suit, has at this writing sold over 90,000 copies at \$79.95. . . . *Blue Velvet*, the 1963 schlock ballad hit by the Polish Prince, aka **Bobby Vinton**, is now the title song of a new movie by **Dino de Laurentiis**, aka the King of the Clinkers. Proving conclusively that there is no justice, the track will again be sung by Vinton himself. □

DANIEL CANDI/DEUTSCHE GRAMMOPHON



Stratas (above) as Lulu, Migenes-Johnson as rocker

sung in many of the same opera houses in Europe and North America, and both have been especially successful in the demanding title role of Alban Berg's opera *Lulu*. In fact, once at the Metropolitan Opera, Migenes-Johnson stepped in as Lulu to replace Stratas, who was ill.

Both singers have also



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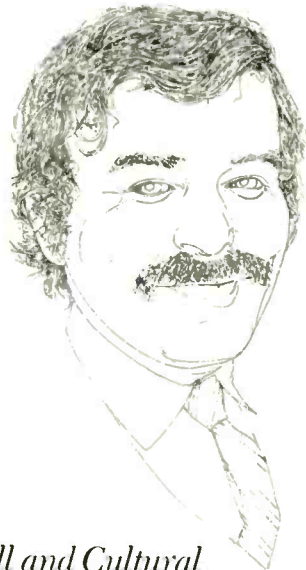
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CIRCLE NO. 12 ON READER SERVICE CARD

by Ralph Hodges



## Krell and Cultural Immortality

**T**HE first piece of literature on a Krell amplifier I ever saw explained that the company, based in Milford, Connecticut, took its name from an extinct American Indian nation whose technological and cultural accomplishments had, for a brief golden age, overshadowed anything else to be found on earth. False! I raged. As any follower of B movies knows, the Krell were an extraterrestrial race in the Fifties science-fiction classic *Forbidden Planet*. "Well," acknowledged Krell president Rondi D'Agostino in her best so-what-else-is-new manner, "we didn't want to step on any copyrighted toes, so we devised our own source for the name."

This anecdote speaks eloquently for Krell's mission as a company, and perhaps for the intent of high-end audio as a whole. Krell has a high and sophisticated consciousness of legends, and wants to become one, but at the same time it wants to be apart from the crowd, with distinct recognition for its special design and marketing philosophy. And, like the cinematic Krell, it builds for eternity. The company's product logo is its name engraved on a thick slab of brass that is held in place by six oversized bolts. The

bolts are an official part of the logo.

All Krell amplifiers operate in pure Class A mode, no ifs, ands, or buts, and the power amps are huge, hot, and heavy. Designer Dan D'Agostino claims that he can demonstrate, to anybody's satisfaction, the pernicious effects of crossover distortion, which is, of course, what Class A operation eliminates. He also says that he finds evidence of transient intermodulation distortion (TIM) in numerous amplifier designs, but that it is without consequence, because as far as Krell can determine, TIM is not audible.

More conventional distortions are not usually heard either, certainly not in amounts of 0.1 percent or less, says D'Agostino, and he discounts the role of distortion products in impairing the sound quality of amplifiers. "Tube amplifiers occasionally find themselves operating with 5 to 8 percent distortion, which is certainly audible. Yet modern-day tube enthusiasts listen with pleasure notwithstanding. Certainly our amplifiers are not designed with low distortion as a primary criterion, although they happen to have turned out more than acceptably low in that department. However, if I were to sit down and modify one of our products—installing local and global feedback and all the rest—to minimize distortion deliberately, I'm absolutely sure the sound quality of the amplifier would deteriorate."

Well, legends rarely come with orthodox views attached, but it's fair to ask at this point why reduced distortion would hurt rather than help and what relevant criteria for sound quality exist other than frequency response, noise, and distortion. To the first question, D'Agostino replies that a feedback-controlled low-distortion amplifier is so occupied in comparing itself to itself and wringing out spurious residues that it does not properly attend to the real business at hand, that of behaving as an unobstructed and unobtrusive conduit for power.

To the second, he answers: "As to why some amplifiers sound unpleasantly bright or dull, or wide-band or constricted, there are a lot of theories, but I tend to believe in phase integrity and such matters as how many electrons manage to

make it through the outputs. Some amplifier circuits literally run out of electrons and are incapable of sounding the way music sounds."

Krell opened its doors in 1980 with a 100-watt stereo power amplifier, received its first serious recognition in Europe and the Far East, and only later became known at home in the U.S., and that entirely by word of mouth (the company has never advertised domestically). The Krell line now includes nearly a dozen amplifiers and preamplifiers, ranging in price from \$1,500 to \$15,000, and the company has already moved twice for the sake of expansion, with a third move imminent. New products on the way are a CD player and an 8mm VCR with Krell-refined audio and video electronics.

Asked why the introduction of just another amplifier has led to such manic growth, D'Agostino explains that he was able to offer a high-power amplifier with good sound and utter unbreakability—something he believes did not exist before. The first Krell model was deliberately simple, but the amplifiers are now in their third generation of development. Their complexity and sophistication have increased geometrically, he says, as have worthwhile improvements in sound. The design process is cloaked in a bit of mystery. D'Agostino prefers to state only that conventional test instruments and procedures are not used. Instead, Krell creates its own gear and routines, with emphasis on instantaneous impulse responses, phase, and current and voltage gain. With these data, says D'Agostino, he is able to adjust the sonic "signature" of an amplifier design to achieve a sound that is warmer (more musical) than usual from transistors, but cleaner and more incisive than what is available from tubes.

What this sort of adjustment implies relative to the idealized high-fidelity goal of pure, unvarnished truth is something every audiophile must work out for himself. But it's obvious that Krell means to exert an influence on the way sound enthusiasts listen to music that will confer upon its efforts a certain cultural immortality. The way things are going it just might succeed. □

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