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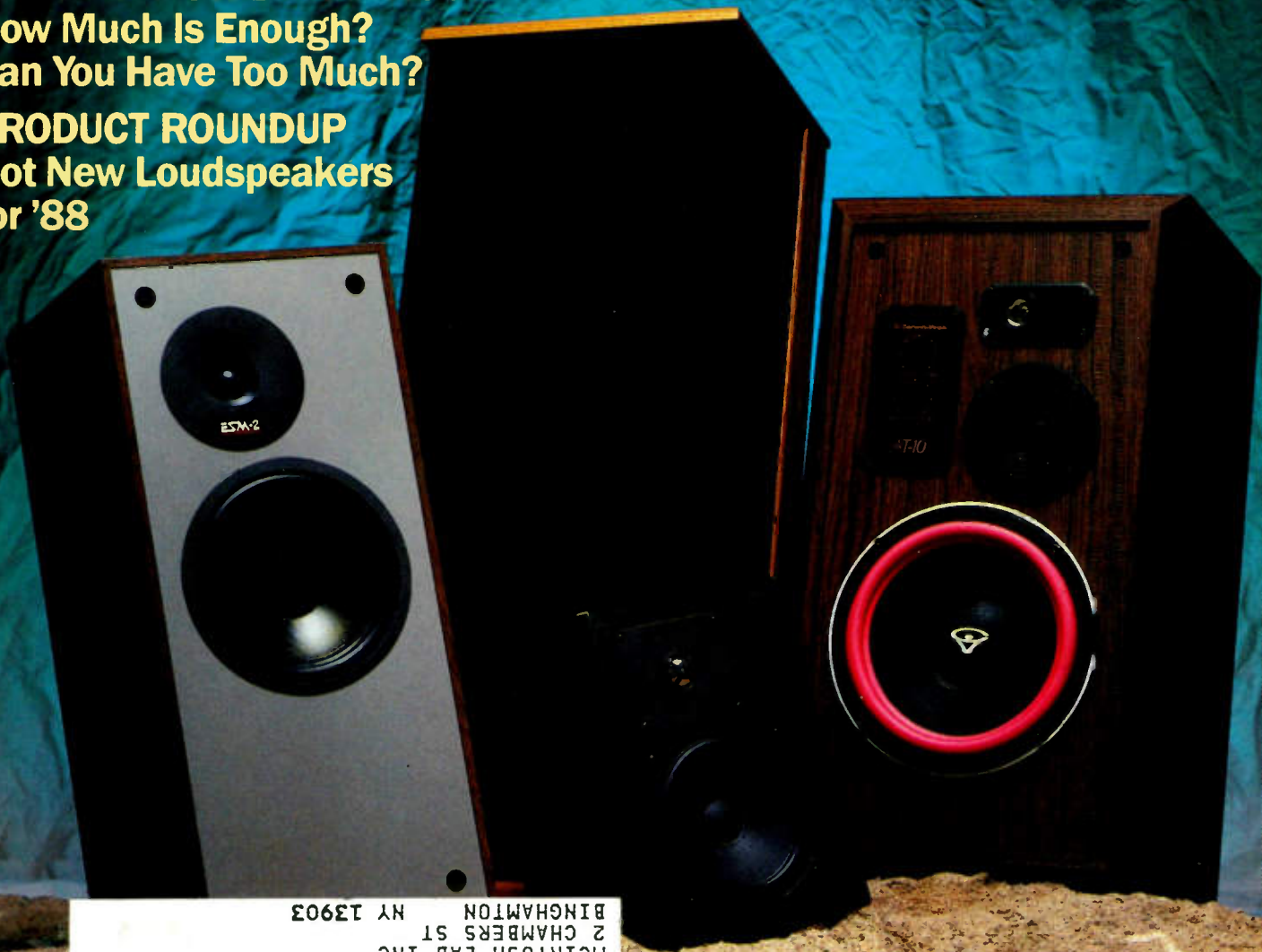
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Cover design: Joanne Goodfellow
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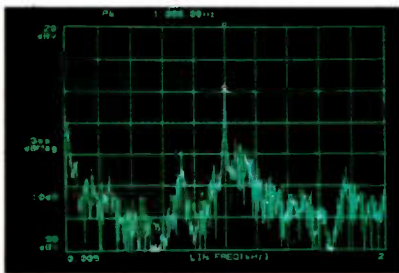
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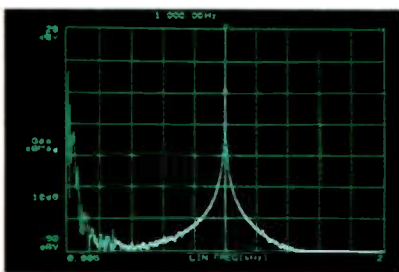
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More Music, More Often

By Michael Riggs

One of the biggest challenges we face at **HIGH FIDELITY** is adequately covering our entire beat. A general-interest magazine has the luxury of embracing any topic it chooses. Most special-interest publications, on the other hand, limit themselves to just one. We fall somewhere between those extremes in that we cover both audio equipment and recorded music. And as audio and video have become more tightly integrated in home entertainment systems, we have begun reporting on high-performance video equipment as well. This grouping of subjects is so natural that it is difficult for us to imagine narrowing **HIGH FIDELITY**'s focus.

On the other hand, it is hard for us to fit everything we'd like on all those subjects into the pages available in each issue. And though we hope the choices we make are good ones, it is almost inevitable that not everyone will be satisfied all the time. This seems especially true when it comes to music. I remember the day we got a letter from one reader complaining that we weren't running enough reviews of classical recordings and one from another reader asking why we "wasted" so much space on them. No way we're going to make both of those guys happy.

All this is not preface to an announcement of big changes in **HIGH FIDELITY**. But I do have news that should please classical-music fans. If you are among them, you probably are at least passingly familiar with our sister publication **MUSICAL AMERICA**, which is celebrating its 90th anniversary this year. America's oldest continuing periodical devoted to classical music has had a varied career, including a long stint as a section of a special edition of **HIGH FIDELITY** sent only to **MUSICAL AMERICA** subscribers. Last year, **MUSICAL AMERICA** re-emerged as a separate, bimonthly magazine. We had long hoped that **MA** could once again establish an independent identity, and we have been gratified by its success.

Although **MUSICAL AMERICA**'s primary subject is music and dance performance, it has carried a record-review section ever since it split off from **HIGH FIDELITY**. Now, with the June issue of **MA**, that portion of the magazine is dramatically and permanently expanded. The force behind this change is our recent acquisition of *Opus* magazine, formerly published by Historical Times, Inc. If you currently are a subscriber to either magazine, you will receive the new, combined edition of **MUSICAL AMERICA** and *Opus* as a matter of course. If not, give it a look. I think you'll be very pleased with what you see: the best writers in the country covering events, performers, and recordings with the same depth and authority you have come to expect from **HIGH FIDELITY**. (And if that's not enough, we're dropping the price of **MA** as well.)

Forgive me if the above comes off as a little promotional, but we're very excited about this addition to **MUSICAL AMERICA**, which makes it more than ever the nation's foremost journal of classical music. Finally, in

case you were wondering, **HIGH FIDELITY** will continue to follow classical music. And if you subscribe to both **HF** and **MUSICAL AMERICA**, you'll find that they complement each other; there will be no duplication of coverage between the two.

JOHN BOWERS, 1922-1987

Just after the new year, we received word from England that John Bowers, founder and chairman of B&W Loudspeakers, had died on December 20. His passing was not a complete surprise, for John had shortly before sent a letter to many of his friends and acquaintances in which he told us of the recently discovered cancer that would take his life sooner than anyone expected. The tone of the letter was unmistakably his own; the warmth, graciousness, and enthusiasm he radiated in person were there in abundance. He described his 21 years at B&W as "the greatest fun of my life" and expressed hope that we would have a chance to meet and talk again. I hoped for this, too, and regret that it was not to be.

Bowers's career in audio began just after World War II, when he and Roy Wilkins, with whom he had served in the army, opened a shop in Worthing, Sussex. Called Bowers & Wilkins, Ltd., it started as an outlet for radio and television receivers and later branched out into the nascent field of high fidelity audio. Bowers began his experiments in loudspeaker design there, and the store is open to this day, under the management of Wilkins.

In 1966, Bowers joined with Peter Hayward to form B&W Loudspeakers, Ltd, which he built into one of the world's foremost manufacturers of high-performance loudspeakers. The first B&W product I remember was the DM-70—a hybrid design using an acoustic suspension woofer and an electrostatic tweeter. It was quite striking for its time (about 1973), both visually and sonically. Although the company's speakers were still relatively unknown in this country, they had established themselves as standards of excellence in England.

Perhaps the first B&W loudspeaker to achieve wide notice in the U.S. was the DM-6, one of the earliest linear-phase loudspeakers. Its stepped baffle (which served to align the acoustic centers of the various drivers) gave the DM-6 a distinctive potbellied appearance, and it often was described as resembling a pregnant kangaroo.

Other innovations followed as B&W became a leader in the application of advanced technology to loudspeaker testing and design. Today, B&W is best known for its Model 801 monitor loudspeaker (**HIGH FIDELITY**'s reference speaker for a number of years) and its ingenious Matrix Series designs. Bowers left behind a top-flight organization, and we share his confidence that it will continue the work he loved in a way that will honor his memory. But his sensitive, intelligent presence will be missed by all who knew him. □



PIXEL-COUNT CONTROVERSY

Although I have the greatest respect for David Ranada's knowledge of video technology (he has taught me a lot), his March "Scan Lines" column misses one important benefit of high pixel counts in the imaging elements of video cameras and camcorders. He seems to forget that a square wave and a sine wave may be of the same frequency but nonetheless look very different on a TV screen.

Consider the example of a low-density CCD (charge-coupled device) imager focused on a white object sharply defined against a black background. The sharp leading-edge transient probably will fall on one large pixel and therefore be interpreted as some shade of gray. By increasing the number of pixels, you reduce the likelihood of the transient falling on just one element. And if it does, the pixel that registers "gray" will be much smaller, as will the corresponding area of the TV screen. In either case, the leading edge will be more sharply defined, even though frequency response isn't affected. HQ improves VHS picture quality by enhancing edge detail without extending video frequency response. A high-resolution camera improves picture sharpness in the same way.

Rayburn E. Hahn
Dallas, Texas

In his March "Scan Lines" column, David Ranada misguidedly objects to camcorder manufacturers touting imaging-chip pixel counts that exceed the resolutions of the recording systems. Ironically, Mr. Ranada almost gets the answer when he points out the aliasing effect and the requirement that a sampling rate be at least double the highest frequency of interest.

The video equivalent of oversampling in digital audio is what might be called "overpixeling" in the pickup device. A simple example will illustrate the point. Imagine a checkerboard consisting of black and white squares of a size that puts them right at the theoretical resolution limit of the TV system. Now suppose the pickup device has exactly the same number of pixels as there are squares in its view. If the camera operator aims correctly, you'll get a perfect checkerboard on the TV screen. But if he points half a square off in any direction, you get a gray frame, because each pixel sees half white and half black but can respond only to the average intensity of the total light striking its surface.

Now suppose the pickup has twice as many pixels horizontally and vertically

(four times as many overall). Regardless of how the camera is lined up, you see a checkerboard, not a gray frame. You still need optical filtering in the lens to stop aliasing, but with overpixeling, the filter cutoff requirements are relaxed (that is, for a given filter, things look better with oversampling).

Mr. Ranada is correct that boosting the pixel count also increases noise and cost, because raising the number of elements per unit area lowers signal output per pixel and reduces the chip yield. But giving the customer the best quality for the price is what it's all about. Increasing the pixel count to as many as four times the number "necessary" improves resolution under dynamic conditions, but more than that is largely wasted. Also note that since noise tends to be random, it gets "averaged out" to some extent by the resolution limit in an overpixeling system.

Keep up the good work. You guys are right a lot more than you're wrong.

C. Norman Winningstad
Chairman and CEO
Lattice Semiconductor Corp.
Hillsboro, Ore.

Technical Editor David Ranada replies: I based my arguments on and derived my minimum-pixel-count figures from "Resolution Considerations in Using CCD Imagers in Broadcast-Quality Cameras" by Thomas M. Gurley and Carl J. Haslett, a paper published in the September 1985 SMPTE Journal. In it, the authors give the following formula for the Nyquist frequency of a CCD (the visual frequency beyond which aliasing occurs): Horizontal resolution measured in scan lines equals three-fourths the number of pixels in the CCD's horizontal direction. Both Mr. Hahn and Mr. Winningstad make a similar mistake and forget that any sharp transition between light and dark (as in Mr. Hahn's "sharp leading-edge transient" and Mr. Winningstad's checkerboard) contains visual frequencies far beyond any CCD's Nyquist frequency. Therefore, if it is not to produce aliasing effects when sampled by a CCD, a checkerboard pattern—especially one "right at the theoretical resolution limit of the TV system" (whatever that is)—must be optically filtered before it hits the CCD. It ends up being a regular pattern of blurry dots. A "sharp leading-edge transient" would be a similarly blurred slide from black to white through gray. In both cases, the pixel counts I gave would be sufficient to produce the resolution figures cited. As I wrote in "Scan Lines," "There are other aspects of camcorder visual performance that

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Art Director Joanne Goodfellow

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L E T T E R S

are more important than raw CCD pixel count."

Mr. Winningstad brings up the important distinction between dynamic resolution (resolution when the image—or the camera—is moving) and static resolution (as measured with a stable test pattern). The catch is that the eye's resolution falls dramatically once an image is in motion, so even maximum system-limited resolution may be overkill. In sum, I stick by my minimum-pixel-count figures with this proviso: They are valid only on the assumption that the horizontal pixel counts given by camera manufacturers actually represent pixels directly contributing to horizontal resolution (this depends on how color is derived from a single CCD).

CLEANING VCRs

As a VCR service technician, I feel compelled to respond to Larry Klein's March "Crosstalk" column. Where I work, hardly a day goes by that someone doesn't come in with a VCR whose heads are clogged, saying he tried a cleaning tape that didn't help. My experience has been that once a head is clogged, cleaning tapes seem just to pack the oxide in, making it more difficult to remove—sometimes to the point of requiring that the head cylinder be removed and the heads backflushed. On rare occasion, I have even had to replace video heads because they could not be fully unclogged without risk of damage.

I also feel it is important to stress that video heads are very fragile. Untrained VCR owners should not go poking around with cotton swabs as they would in their audio tape decks. Most likely, they will either miss the video heads completely or break them. Cleaning tapes, unfortunately, require more take-up torque than do regular tapes, making them harder on a VCR's loading and drive mechanisms. I have pulled several eaten cleaning tapes from machines.

Video heads rarely will clog if you use high-quality tapes. Don't play a rental tape if it looks as though it has been over Niagara Falls, and periodically retire tapes that you frequently rerecord. Keep your VCR as well ventilated as possible and have it professionally cleaned about once a year, as the manufacturers recommend. A good servicer will recondition rubber drives, lubricate the transport, and do other preventive maintenance with a cleaning that can greatly extend the life of your VCR.

Mark Foehring
Carol Stream, Ill.

FOSGATE RESPONDS

We appreciate HIGH FIDELITY's review of our DSM-3602 surround-sound processor [January]. However, we would like to clarify some of the test results obtained by Diversified Science Laboratories.

The text of your review indicates a measured power output of 15.8 watts per channel at 1 kHz into 4 ohms, whereas the data column notes the same output with an 8-ohm load. In reality, neither is quite correct. We assume DSL used either a pure right- or left-channel (or perhaps L+R) audio test signal when measuring surround-channel output power. Because the DSM-3602 is a "logic steering" design, its cancellation circuitry will null or attenuate the input signal and thus generate an erroneous measurement unless an L-R test tone is used. An L-R signal is similar in most important respects to the encoded track of a Dolby Surround program source. Use of an L-R test signal will yield greater wattage into both 4- and 8-ohm loads and improve the signal-to-noise ratio—results that are representative of what users may expect from the unit in normal operation.

Another minor point is the noise performance of the main channels. Subsequent to the introduction of the DSM-3602 and the early sample you reviewed, we changed the value of the internal trim potentiometers to permit a greater output level, which improves the S/N ratio as well. The DSM-3602 is now available either with or without internal surround amplifiers.

Charles Wood
Fosgate, Inc.
Heber City, Utah

We are now using an L-R signal for all evaluations of surround-channel performance. (The Fosgate DSM-3602 was the last processor to be tested in any other way.) We regret the error.—Ed.

MUSICAL CHAIRS

In reference to your review of Strauss's *Don Quixote* and *Burleske* ["The CD Spread," February], let me make clear that cellist Antonio Janigro was first chair with the Chicago Symphony Orchestra during the Reiner years. Indeed, Reiner was blessed at one time or another with first-chair cellists Dudley Powers, János Starker, and Frank Miller. The beloved Frank remained first chair for 25 years, until he died last year.

Al Price
Chicago, Ill.
(Continued on page 9)

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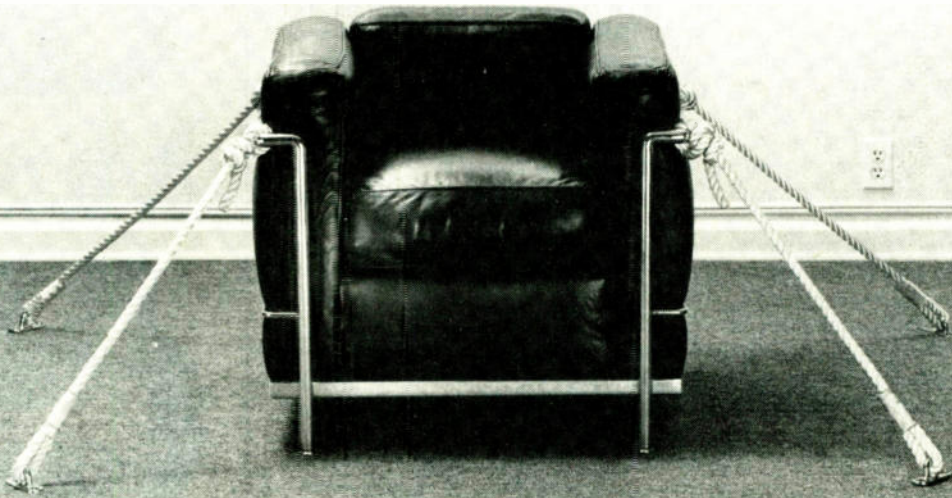
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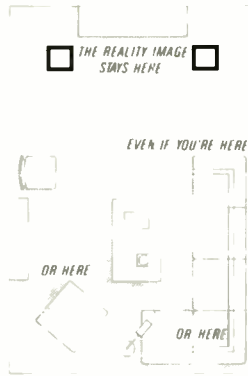


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(Continued from page 7)

A REAL NICE CLAMBAKE

After looking in vain for a review that would correspond to my enjoyment of the new *Carousel*, I was pleased to find one in your February issue. I wonder, though, how the splendid Lincoln Center production (which is in print, and on CD, too), the uneven Lehman Engel [conductor of the Robert Merrill/Patrice Munsel disc, RCA LPM 1048] account, the miscast *Armstrong Circle Theatre* version, and the deafeningly strident Command recording can be lumped together as "colorful and conscientious."

In any case, it's a bit frightening to see a review and caption speaking of Barbara Cook and Samuel Ramey singing "a rapturous 'You'll Never Walk Alone.'" If they did, it was at A Real Nice Clambake, not on the record. Had the singers been John Lennon and Paul McCartney, would this have happened?

Richard Sebolt
Springfield, Mass.

We regret the editorial oversight that allowed an error in Paul Kresh's review to lead to a faulty caption as well.—Ed.

IN DEFENSE OF DOUGLAS

It's bad enough that HIGH FIDELITY is down to fewer than six full pages of classical recording reviews in the February 1988 issue (and that's putting it charitably, since a substantial portion of that space is devoted to a large photograph and review of a "crossover" disc). Worse is devoting so much of that scarce space (almost a column) to a review in which the reviewer admits to not even having listened all the way through the recordings he is writing about. I refer to Thomas Hathaway's review of two LP releases by Barry Douglas. Hathaway says he was so unimpressed by the first four sections of Mussorgsky's *Pictures at an Exhibition* on both discs that he did not bother listening to anything else on either disc, because he could not recommend either.

If Hathaway is not curious enough to listen all the way through the recordings he is assigned to review, then perhaps he should not be reviewing them. I've never heard Douglas play, either live or on record, but I think it is unfair to him and a disservice to your readers for Hathaway to blithely dismiss his recordings based on just a few minutes of listening. What if Douglas plays Liszt, Wagner, or Corigliano brilliantly? Even if Hathaway would not recommend the disc because of the Mussorgsky, some appraisal of Dou-

glas's playing of the other composers would surely be warranted.

Arthur S. Leonard
New York, N.Y.

Your February issue contains an alleged review of Barry Douglas's recordings of nearly identical repertory for RCA Red

Seal and Van Cliburn Foundation Recordings. I say "alleged" for good reason. This is the first time in my memory that a reviewer who found the performance objectionable from the beginning—in this case, Thomas Hathaway—readily admits to not listening to more than nine minutes of music on either disc. ▶



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L E T T E R S

In a profession unfortunately too often marked by quirky and bizarre sensationalism, this ultimate achievement of reviewing without listening and then unabashedly admitting so in print sets new standards of irresponsibility. You should not permit this to take place in your publication. Bad reviews are bad reviews, but not listening at all surely deserves not printing an opinion at all.

Jay David Saks
Executive Producer
Artists and Repertoire
RCA Red Seal
New York, N.Y.

Thomas Hathaway replies: It is not incumbent upon a reviewer to listen to every note of a bad record if he can fairly establish for the reader what makes it bad without doing so. Usually that is not possible, but in this instance, the nearly ten minutes up to the end of "The Old Castle" sufficed. I think now that I should have persevered anyway, realizing that someone was bound to want me to prove how Douglas played even the filler pieces. But if Mr. Leonard wants a

precedent for my not having done so, Vladimir Ashkenazy once stated that he did not need to listen to more than a few moments of an auditioner's performance to know whether it was worth his while to hear more—and, by implication, whether it was worth anyone else's while to hear the player, either. (Samuel Johnson for his part confessed that he seldom finished reading even books he liked.)

Classical Music Editor Ted Libbey replies: As a record reviewer myself, I would not write a critique without having heard the entire record, no more than I would write a review of a concert without having listened to all of it. I am convinced, however, that a trained, observant listener who knows the repertoire can tell very early on whether a particular artist has insights into a particular piece, whether his interpretation has merit, and whether or not that artist is a master of his instrument. In auditions, I have very often had to make such judgments based on as little as ten minutes' listening. I admire Mr. Hathaway's candor no less than I trust his judgment, and be-

cause of that, I printed his review of Barry Douglas's two recordings as he wrote it. In the future, however, I would probably suggest to him that he not leave himself open to criticism of his method, even in situations where his evaluation has not been disputed.

BACK ON THE RIGHT TRACK

Thank you for your kind words regarding the Perahia/Haitink Beethoven concerto cycle [January]. I would like, however, to correct your reviewer's assumption that "... knob-turning in some passages causes certain instruments to predominate one moment and others the next." All five concertos were recorded directly onto a Decca two-track digital tape recorder with absolutely no gain-riding employed. The balance changes you refer to are purely acoustic in nature and reflect the interaction of orchestral choirs as desired by Maestro Haitink.

Steven Epstein
Executive Producer
Artists and Repertoire
CBS Masterworks
New York, N.Y.



L E T T E R S

SHOWDOWN AT HI FI

David Browne's critique of Robbie Robertson's solo album [March] is cruel, to say the least. He shows no objectivity whatsoever.

Who cares about Robertson having spent a decade "coking it up"? Mr. Browne must hate all artists if he thinks that remark is really relevant.

Reading between the lines, it's clear that Mr. Browne thinks this record is a clone of a U2 record. Yes, that band does play on the album, but the songs that do not feature U2 do not sound like U2. As for the mythological lyrics, Robertson was writing these kinds of songs when U2 was still in school (not to knock one of my fave bands).

What does Mr. Browne mean by "L.A. fat cat playing American Indian storyteller"? Robertson is half Iroquois, and he writes his visions, as wealthy and full of clout as he may be. Did Bruce Springsteen ever go to Vietnam, as he would have us believe in "Born in the U.S.A."?

Where does Mr. Browne get the assumption that Robertson is calling himself

the king of rock 'n' roll in "American Roulette"? He is writing about Elvis Presley! It is not an autobiography!

I am not totally biased, though: I agree that Robertson barely has a voice left, but it certainly has passion and even a bit of soul. This is rock 'n' roll, not opera or gospel, and the songs can stand on their own. Besides, do the top vocalists—Springsteen, Jon Bon Jovi, Robert Plant—have better voices?

I love this album.

Sherilyn Lake
New York, N.Y.

It has been a long time since I have been motivated to write a letter in response to a record review. However, David Browne's critique of Robbie Robertson's solo album requires an immediate retort. Talk about mean-spirited, subjective reviews—this one is a classic. It reads as if Mr. Browne has a personal vendetta against Robertson and is less interested in the music than in the subject's perceived lifestyle.

By any measure, *Robbie Robertson* is a wonderful album. The lyrics are meaning-

ful and mature, and the music subtly draws you in and envelops you to the point where you just don't want the record to end. Ten years from now, it will still sound terrific. As for Mr. Browne's lowly opinion of Robertson's voice—a voice that fits these songs like a glove—it would be interesting and probably amusing to know whom Mr. Browne thinks is a good singer. Bruce Springsteen, perhaps?

Mr. Browne's loss is my considerable gain. Or maybe I am being too kind: Mr. Browne just doesn't get it.

Bob Telaak
Cleveland, Ohio

David Browne replies: For the record, I called only one song on Robbie Robertson, "Testimony," a U2 soundalike; I do not "hate all artists," only self-important ones; and, to be honest, Bruce Springsteen and even Jon Bon Jovi have better voices than Robertson these days—a damning fact if ever there was one.

All letters should be addressed to The Editor, HIGH FIDELITY, 825 Seventh Ave., New York, N.Y. 10019. Letters are subject to editing for brevity and clarity.

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(Maybe you should write that down so you don't forget it.)



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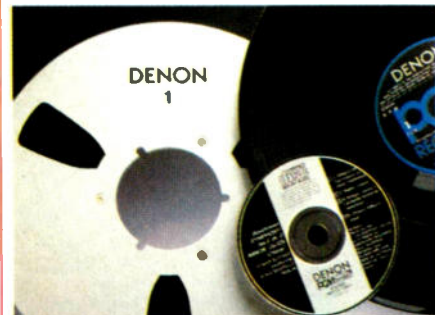
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they've variously hailed our CD players as "a winner on every count," "the player I recommend most highly," "superlatives have to be used," and "in several respects, the best I've ever heard."

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DESIGN INTEGRITY

Ultraportable CD Player

Three-inch Compact Discs, which hold as much as 20 minutes of music, are the inspiration behind Sony's D-88 Pocket Discman (\$360), the smallest-ever portable CD player. Recently dubbed "CD-3" by the recording industry, the new miniature discs are just beginning to receive support from the major record labels, who may decide to offer three versions that differ in content and price.

By virtue of a two-position center spindle, the D-88 can play regular CDs as well (although they stick out from two adjoining sides of the player). The unit weighs



just 14 ounces with its supplied rechargeable battery pack, which runs for as much as two hours off a three-hour charge. Features include track skip and scan, "shuffle" (random) play, and three repeat modes (one track, all tracks, and shuffle play). Optional accessories include wired and wireless remote controls and a car-battery adapter. *Sony Corp., Sony Dr., Park Ridge, N.J. 07656.*

Keyboard Orchestra

If you haven't been to a musical-instrument store lately (or even if you have), chances are you'll be astounded by how accurately today's top electronic keyboards emulate acoustic-instrument sounds. Such equipment tends to be designed for professionals and serious amateurs. One of the most respected pro keyboards is the Kurzweil 250, which features breathtaking digitally sampled sounds ranging from choirs to heavy-metal guitars. But the 250 starts at about \$10,000, give or take a couple of paychecks.

The good news for music lovers is Kurzweil's new Ensemble Grand Piano (EGP), part of the company's line of instruments for the home. The EGP, which sells for less than \$3,000, is a 76-note portable keyboard that contains 100 preset sounds borrowed from the renowned 250.



Kurzweil's EGP: Symphony of sampled sounds

At the push of a button, your fingers can play the sounds of a variety of pianos, organs, strings, horns, wind instruments, and choirs (yes—human voices), in addition to a selection of synthesized sounds. Among the presets are a variety of layered sounds (e.g., piano and strings) and split sounds (e.g., acoustic bass for left hand, piano for right). You can either listen in silence through headphones or make noise through the built-in speakers or a connected stereo system. The sounds can be enhanced with the unit's chorus, tremolo, and vibrato effects.

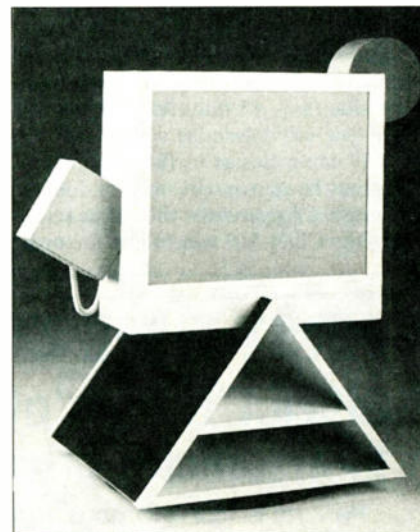
The EGP's keyboard acts and feels similar to a piano's, with weighted keys that respond to the velocity of a strike. Through MIDI connections, however, you can use any existing MIDI keyboard to drive an EGP sound module (a less expensive, keyboardless EGP). For the electronic-keyboard neophyte looking for pro-quality sounds, the Kurzweil Ensemble Grand Piano ranks as one of the most accessible and flexible instruments in its price class. *Kurzweil Music Systems, 411 Waverly Oaks Rd., Waltham, Mass. 02154.*

The Art of Design

Last fall, Sony inaugurated a competition for television designs of the future. The event was open to all college and university students enrolled in interior- and industrial-design programs in the U.S. Sony recently presented prizes and awards for the top five designs in the home and portable category. Brian Elliott, a third-year student at the Art Center College of Design in Pasadena, took first place in the home category with his "Animan" creation, a combination TV-set/robot that would move in response to specially encoded broadcasts and warn of intruders detected by a built-in video camera. Rusty Snell, a third-year student at Arizona State University, won the portable category with "Solarman," a

two-inch screen with a flip-up glare panel that would double as a solar-energy collector to power the set. Another portable, called "so-knee," would enable hands-free viewing by strapping over one's knee—perfect for sports fans who want to watch themselves watching themselves at a live game.

Sony is to be congratulated for initiating such an important event. Consumer-electronics companies should take greater



Console TV of the future?

advantage of the huge amount of design talent available in this country. From a user's standpoint, there's room for improvement in the way current audio and video products are designed, especially as these products grow in sophistication.

Yamaha Bits

Although it is not a full-fledged Hi-Bit CD player, the Yamaha CDX-510 (\$319) uses a 16-bit digital-to-analog converter in conjunction with the company's four-times-oversampling 18-bit digital filter. (For a



Yamaha CDX-510U CD player

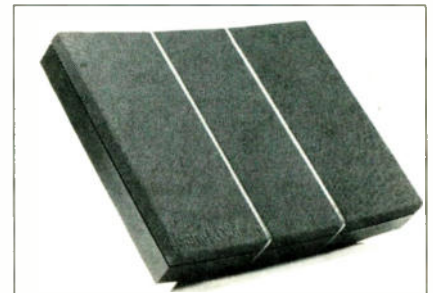
better understanding of the significance of extra-resolution CD players—such as Yamaha's Hi-Bit models—see "Golden Rulers," May.) To facilitate making CD dubs, a feature called "Tape Program Edit" enables you to enter the length of a blank cassette side (say, 45 minutes), whereupon the player will determine which tracks on the CD come closest to filling that time. (This may be appropriate only for dubbing pop music.) Apparently, the tracks selected by the CDX-510 will follow the order

on the disc or in a programmed sequence, deviating only as necessary to best match the tape-side length. Other features include 24-selection programming and four repeat modes. All but the headphone volume can be operated by the supplied remote control.

At \$259, the CDX-410 offers almost all of the 510's features (including tape program edit), but does not include the Hi-Bit filter. *Yamaha Electronics, 6660 Orange-thorpe Ave., Buena Park, Calif. 90620.*

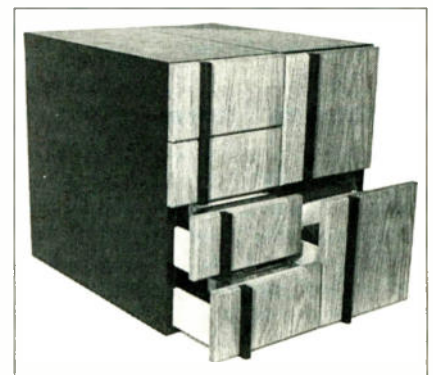
B&O Speaker

Shaped like a slender, curved panel, Bang & Olufsen's RL-35 two-way, bass-reflex loudspeaker (\$380 per pair) can be mounted on a wall or placed on a floor or on a bookshelf (horizontally or vertically, according to the company). The 5-inch woofer and 1/4-inch tweeter are housed in a rigid ABS plastic enclosure that has internal bracing to prevent vibrations from coloring the sound. Each speaker measures about 16 inches wide by 12 inches high by 5 inches deep and weighs less than 8 pounds. *Bang & Olufsen of America, 1150 Feehanville Dr., Mount Prospect, Ill. 60056.*



CD and Tape Storage

Hill Products's modular storage cabinets for CDs and audio cassettes are sized to fit on the shelves of most audio-video furniture. The CD-Box holds as many as 60 CDs placed vertically in two drawers con-



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taining dividers. The Tape-Box has four drawers that hold a total of 64 audio cassettes or 8mm videocassettes. Both storage units are made of high-density particle board with black wood-grain vinyl sides and solid-wood fronts. Either costs \$64.95 (or \$69.95 with optional door finishes) and can be ordered directly from Hill Products by calling (800) 247-2018.

(Continued on page 80)



Answers to Readers' Questions

By Larry Klein

Ultrasonic Tweeters

I recently read an ad for a speaker system that claimed its tweeter could produce a response at 50 kHz. Since neither the human ear nor existing program material goes much beyond 20 kHz or so, what's the point of this?

Arthur Dryden
Raleigh, N.C.

It has been claimed by some equipment manufacturers that such an ultrasonic frequency response is necessary to ensure the proper reproduction of the rise times in high-frequency transient waveforms. However, rise time and frequency response are simply two ways of looking at the same parameter: A given rise time implies a certain frequency response, and vice versa.

To claim a response extending to 50 kHz without further qualification is not the same as stating that a component has a response to, say, 50 kHz \pm 3 dB. In truth, the 50-kHz response may be more than 10 dB below the 10-kHz response. But if the tweeter is reasonably flat to 20 kHz—which is still no easy task—I would say that it is providing all the sonic response the ear can use. Anything above that is the equivalent of a sports car with 150-mph capability on highways with 55-mph speed limits. None of the above, however, should be construed as denigrating the pleasure of owning a mechanism with special capabilities, regardless of whether real-world circumstances ever permit them to be fully exercised.

Metal Speaker Grille

I'm considering either substituting metal grilles for the cloth grilles now on my speakers or leaving the grilles off altogether, which was recommended in one of the "underground" audio publications. If I opt for a metal grille, what is the minimum open area suggested for optimal performance?

Perry Basile
Lafayette, Ind.

Those audio reviewers who ego-trip by "discovering" how much better an otherwise excellent speaker sounds with its grille removed are saying, in effect, that the designer did not know what he was doing except when it came to selecting the grille material. This is ridiculous. All responsible speaker manufacturers make extensive measurements with and without potential grille designs in place before finalizing their products. And if a speaker is actually meant to sound better with the grilles off, then the manufacturer should tell you so in the manual. Furthermore, the acoustical properties of a grille are deliberately used by some manufacturers as a design element in the loudspeaker.

If the cloth or foam grille material is too thick or acoustically absorbent, it can indeed prevent the higher frequen-

cies from getting out into the room. You can test this by having someone move the grille in front of and away from the speaker while you listen to the high frequencies in the program. Do your listening both on and off axis, because high frequencies radiated at an angle to the baffle front will travel diagonally through the grille material and may suffer greater attenuation than the on-axis frequencies.

Metal grilles are not necessarily superior to cloth ones. A manufacturer who uses perforated metal grilles in his systems once told me that certain combinations of hole sizes and spacings could result in unexpected diffractions and resonances. In the absence of equipment to test the applicability of specific perforated metal screening, I would therefore suggest you use an open wire grille—or, better yet, use your speakers as is.

TV Speaker Placement

How far away from the TV screen should I install speakers that aren't magnetically shielded?

Roger Bartlett
Phoenix, Ariz.

In general, the minimum distance will be determined by the strengths of the external magnetic fields of the speaker drivers and how the drivers are physically arranged in the system. Since there is no guaranteed magical minimum distance for preventing trouble, simply place the speakers far enough away to avoid picture distortion or color shifts; a three-foot separation should be more than adequate. If your picture tube receives a color-shifted patch during your experimentation, turn the TV on and off several times so that its built-in degaussing coil can remove the induced magnetic field.

Subliminal-Tape Copies

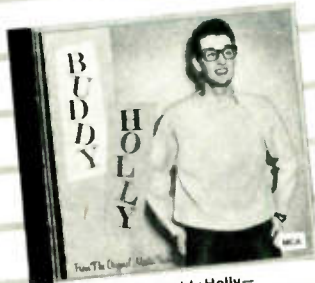
I have a subliminal tape used to induce relaxation. The manufacturer states that if I copy the tape, the subliminal suggestions will be wiped out, leaving only the music. Is that true, or is the manufacturer just trying to prevent home duplication of his product?

David Campose
Northfield, Minn.

A dubbed copy of your subliminal tape will be just as effective as the original—meaning not at all. There is no scientific evidence supporting the notion that messages below the threshold of conscious hearing have any effect whatsoever. If the recorded level of the subliminal signal is so far below the main signal as to be inaudible during intervals in the music, then the subliminal signals are also buried in the tape hiss. The influence of subliminal visual messages in

(Continued on page 18)

From Buddy to The Boss



348110. Buddy Holly—
From The Original Master Tapes. (MCA)



361519. INXS—
Kick. (Atlantic)



365494. George Harrison—
Cloud Nine. (Dark Horse)



361402. Tiffany.
(MCA)



364695. Wynton Marsalis—
Baroque Music For Trumpets.
(CBS Masterworks)



362079. Michael Jackson—
Bad. (Epic)

366443. Good Morning Vietnam.—original motion picture soundtrack. (A&M)

346957. Steve Winwood—Bock In The High Life. (Island)

360016. Spyro Gyra—Stories Without Words. (Digital—MCA)

334607-394601. Carpenters—Yesterday Once More. (A&M)

339226. Gershwin: Rhapsody In Blue; more. Thomas, Los Angeles Phil. (Digital—CBS Masterworks)

339903. The Cors—Greatest Hits. (Elektra)

342097. Barbra Streisand—The Broadway Album. (Columbia)

336396-396390. Billy Joel's Greatest Hits, Vol. 1 & 2. (Columbia)

343715. Vivaldi: Four Seasons—Maazel cond. (Digital—CBS Masterworks)

344184. Copland: Billy The Kid/Rodeo Ballets—Slatkin, St. Louis Sym. (Digital—Angel)

344622. Anita Baker—Rapture. (Elektra)

345199. Beethoven: Overtures—Bavarian Radio Orch., C. Davis. (Digital—CBS Masterworks)

345827. Bob James and David Sanborn—Double Vision. (Warner Bros.)

346544. Kenny G—Duotones. (Ansta)

347492. Glenn Miller Orchestra—In The Digital Mood. (Digital—GRP)

354449. U2—The Joshua Tree. (Island)

347567. Gershwin's Song Book & Other Music For Piano Solo—Leonard Pennario. (Angel)

347955. Huey Lewis & The News—Fore! (Chrysalis)

348318. The Police—Every Breath You Take—The Singles. (A&M)

348458. Dvorak: Cello Concerto—Yo-Ya Ma; Maazel, Berlin Philhar. (Digital—CBS Masterworks)

348649. Pachelbel Canon & Other Digital Delights—Davis, Toronto Chamber Orch. (Digital—Fantare)

348987-398982. Lindo Ronstadt—'Round Midnight. (Asylum)

349134-399139. Beethoven: Sonatas Piano & Violin, Vol. 2—Stern, Istomin. (Digital—CBS Masterworks)

349985. Johnny Mathis/Henry Mancini—The Hollywood Musicals. (Columbia)

350587. Kathleen Battle Sings Mozart. (Angel)

351601. Mozart: Requiem—Malgoire, Grand Ecurie. (Digital—CBS Masterworks)

352534. Holst: Planets—A. Davis, Toronto Symph. (Digital—Angel)

352633. Dolly Parton/Lindo Ronstadt/Emmylou Harris—Trio. (Warner Bros.)

353771. Bolling/Rompal: Suite #2 for Flute & Jazz Piano Trio. (Digital—CBS)

354902. Fleetwood Mac—Tango In The Night. (Warner Bros.)

360974. Squeeze—Babylon And On. (A&M)

354472. Exposé—Exposure. (Ansta)

354514. Jody Watley. (MCA)

354951. Mozart: Flute Quartets—Rampal, Stern, Accardo, Rostropovich. (Digital—CBS Masterworks)

354985. Billie Haliday—From The Original Decca Masters. (Digitally Remastered—MCA)

355362. Whitesnake. (Geffen)

355115-395111. Prince—Sign 'O' The Times. (Paisley Park)

355164. Vladimir Horowitz Plays Favorite Encores. (CBS Masterworks)

355172. Ravel: Rapsodie/Valses/Pavane/Alborada/ etc. Previn, Royal Phil. (Digital—Angel)

355578. Hanson: Symphony No. 2 ("Romantic"), Barber: Violin Concerto. Oliveira; Slatkin, St. Louis Sym. (Digital Angel)

356667. Heart—Bad Animals. (Capitol)

357087. Grateful Dead—In The Dark. (Ansta)

356279. Glorio Estefan And Miami Sound Machine—Let It Loose. (Epic)

356287. Suzonne Vega—Salitude Standing. (A&M)

356329. Randy Travis—Always & Forever. (Warner Bros.)

356501. Benson/Klugh—Collaboration. (Warner Bros.)

357079. Michael Brecker. (Digital—MCA/Impulse)

359075. Aerosmith—Permanent Vacation. (Geffen)

360107. Billy Idol—Vital Idol. (Chrysalis)

357350. Duke Ellington Orchestra—Digital Duke. (Digital—GRP)

357368. Hirashimo—Go. (Epic)

357640. Wynton Marsalis—Standard Time. (Columbia)

357657. Beethoven: Piano Concerto No. 5—Murray Perahia. (Digital—CBS Masterworks)

357871. Tchaikovsky: Waltzes—S. Commission and Houston Symphony. (Digital—Pro Arte)

357889. Copland: Billy The Kid; Appalachian Spring; etc.—Bernstein, NY Phil. (Digitally Remastered—CBS Masterworks)

358127. Kronos Quartet—White Man Sleeps. Volans; Ives; Bartok; etc. (Digital—Noneseuch)

358663. The Art of Alfred Brendel Volume 1—"Virtuoso Pieces." (Vanguard)

358929. Elton John Live In Australia. (MCA)

358937. Handel: Royal Fireworks Music—Merrill, Royal Phil. (Digital—MCA Classics/RPO)

359018. Pat Metheny Group—Still Life (Talking). (Geffen)

359695. Soroah Vaughn—Brazilian Romance with Milton Nascimento. (CBMA)

359711. Brahms: Piano Quartet, Op. 25—Murray Perahia, Members Of The Anacoda Quartet. (Digital—CBS Masterworks)

359927. Debbie Gibson—Out of the Blue. (Atlantic)

Classics of the 50's, 60's & 70's

138586. Bob Dylan's Greatest Hits. (Columbia)

219477. Simon & Gorkfunkel's Greatest Hits. (Columbia)

231670. Janis Joplin's Greatest Hits. (Columbia)

244459. Santana's Greatest Hits. (Columbia)

260638. Chicago's Greatest Hits. (Columbia)

269365. The Band—The Best Of The Band. (Capitol)

286914. Fleetwood Mac—Rumours. (Warner Bros.)

287003. Eagles Greatest Hits 1971-1975. (Asylum)

291278. The Doobie Brothers—Best of the Doobies. (Warner Bros.)

291526. Emerson, Lake & Palmer—Brain Salad Surgery. (Atlantic)

292243. Jacksar Browne—The Pretender. (Asylum)

293597. Led Zeppelin—Houses Of The Holy. (Atlantic)

308049. Creedence Clearwater Revival Featuring John Fogerty—Chronicle. 20 greatest hits! (Fantasy)

319996-399998. Motown's 25 #1 Hits From 25 Years. (Motown)

341073. A Decade of Steely Dan. (MCA)

342501. The Byrds Greatest Hits. (Columbia)

343657. Chuck Berry—The Great Twenty-Eight. (Chess)

345157. Jethro Tull—Aqualung. (Chrysalis)

346445. Beach Boys—Made In U.S.A. (Capitol)

350645. Rolling Stones—Sticky Fingers. (Rolling Stones)

351957. Yes—Frogile. (Atlantic)

353102. Jimi Hendrix—Are You Experienced? (Reprise)

357616-397612. The Best Of The Doors. (Digitally Remastered—Elektra)

358887. Grateful Dead—Workingman's Dead. (Warner Bros.)

364430. Cat Stevens—Classics Volume 24. (A&M)

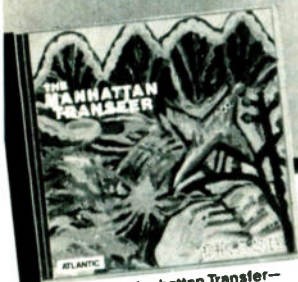
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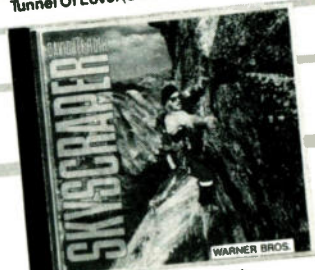
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- 363051. Brahms: *Piano Concerto No. 2; etc.*—R. Serkin; Szell, *Cleveland Orch.* (Digitally Remastered—CBS Masterworks)
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CROSSTALK

(Continued from page 15)

movies or TV programs makes slightly more sense, but no one has ever proven they have any effect, either.

Monitor Readout Focus

I recently bought a video monitor and am very pleased with its picture quality and sound. However, I'm experiencing an annoying problem with the red channel-indicator lights: At my normal viewing distance of 10 to 12 feet, the display is sufficiently out of focus to make it difficult to read. I find this strange, since the monitor picture is perfectly clear. To further confuse the issue, I wear bifocals and discovered that the channel display is in focus when I take my glasses off. Can you explain any of this?

Taylor Evans
Boston, Mass.

The problem is all in your head—or, more specifically, your eyes. As one gets older, the eye's focusing mechanism is no longer sufficiently flexible to adjust (the technical term is "accommodate") adequately for a wide range of viewing distances. Eyeglasses—sometimes bifocals or even trifocals—provide help by correcting the focus over several different distance ranges.

The color of the viewed object affects

focusing because of color-dependent diffraction in the eye's lenses. Red objects, which are at the long-wavelength end of the visible spectrum, require a different focus "setting" than the middle yellow/green frequencies or the short wavelength colors at the violet end of the spectrum. While the normal eye refocuses as needed, the older, inflexible eye has a less dynamic focusing range, as you've discovered.

The human eye is most sensitive to the middle yellow/green frequencies of light in very much the same way that the ear is most sensitive to midrange frequencies around 3.5 kHz. We are less sensitive to the red of an LED channel indicator, which is of far lower absolute brightness than the image on the picture tube.

In an attempt to shift the color to a less problematic area, I have tried a green filter in front of a red display, which only dimmed the readout sufficiently to make it unreadable. It seems that the only solution to your problem is the one you've already discovered: You'll have to remove your glasses when changing channels.

Bulk Tape Erasing

I always bulk-erase my cassette and open-reel tapes before recording with the intention of lowering the noise level and removing any previously recorded material. Recently, I was told that repeated erasing is

not a good idea, because the magnetically vibrated tape-oxide particle can loosen and cause dropouts. What is your opinion?

Henry Rose
Monticello, N.Y.

I suppose that an enormously strong magnetic field acting on a poorly made tape with loose clumps of oxide on its surface could cause shedding, but such a tape shouldn't have reached your store in the first place. In well-made tapes, it is the magnetic polarities of the particles, not the magnetic particles themselves, that are shaken loose by bulk erasing. Whether done by a tape deck's erase head or by an external bulk eraser, the erasing process magnetically scrambles the particle polarity patterns that embodied the previously recorded signal.

Incidentally, polarity randomization is the reason the instructions for bulk erasers and head degaussers tell you to remove the device slowly while it is turned on. If you were to shut off the eraser while it was still close to the tape or head, you run the risk of leaving a high level of residual magnetism. (There are a few tape-head demagnetizers that electronically taper off the degaussing field and hence do not have to be removed before being turned off.)

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

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"Don't Sit So Close to the TV!"

By David Ranada

An entire generation of viewers has endured that clarion—and usually motherly—call, which is often followed by the warning, "You'll hurt your eyes." While it is possible for eyestrain to occur as the result of peering intently into the bright fluorescent light that is the picture tube, the videophile might have to bear this burden if he is to obtain the full measure of cinematic realism promised by video-component ads.

What started me thinking along these lines is a recently proposed Engineering Guideline for the "Design of Effective Cine Theatres" published by the Society of Motion Picture and Television Engineers (SMPTE) in the March issue of its *Journal*. ("Cine," pronounced "sinny," is the snotty engineering adjective meaning motion-picture, much as aficionados prefer "film" to "movie.") The Guideline specifies that in order for a movie—er, cine—screen not to appear too small, it must fill at least 30 degrees of the most distant viewer's field of vision.

SMPTE reached these conclusions after examining fundamental data for the properties of the field of vision (see illustration from the Guideline). One recommendation, based on the lower half of the figure, is that the optimum viewing angles are downward, implying a steep slope to the seats (don't hang your TV from the ceiling). The data also imply that a movie screen appears large only when it occupies a substantial portion of a viewer's field of vision. In calling for a minimum apparent screen size, SMPTE states that "although there is validity in discussing image size in terms of visual acuity or camera-lens perspective, a criterion of how much of the viewer's field of vision is occupied by the image may be more responsive to the filmmaker's intent and the viewer's subjective impression."

If one is to believe a basic commandment of high fidelity video—obtain a perfect picture in order to correctly reproduce the filmmaker's intent—one then should be able to directly apply SMPTE's Guideline to the home-video screen. Doing so produces shocking results.

According to the basic geometry of the situation, a 25-inch (20-inch-wide) monitor subtends only 15.81 degrees for a typical viewing distance of, say, 6 feet, and a 19-inch (16-inch-wide) set subtends only 12.68 degrees. In order to meet the 30-degree SMPTE minimum, a viewer of a 25-inch screen has to sit no more than 3 feet 1 1/4 inches from the screen; for a 19-inch (16-inch-wide) set, the critical distance is about 2 1/2 feet. Few home setups, including those of would-be videophiles, fulfill these distance requirements. Mom's admonitions have been heeded. (For those of you with computers or scientific calculators, the formula is: Viewing distance equals half the screen width divided by the tangent of half the desired viewing angle.)

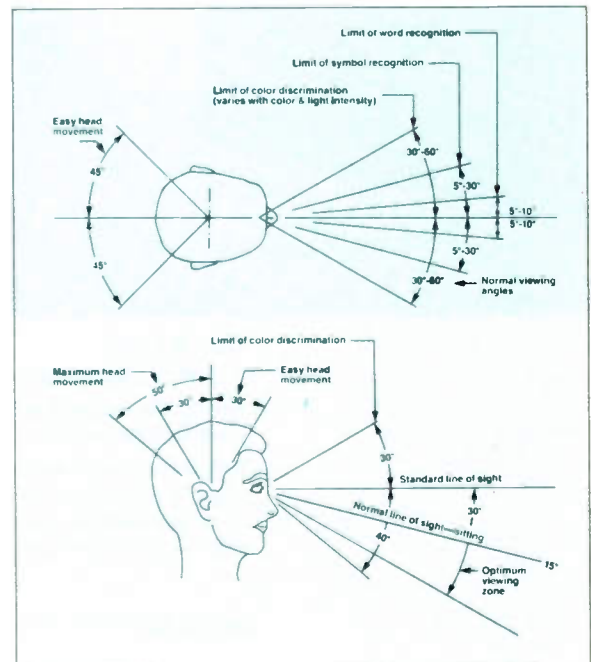
This very large discrepancy between what is consid-

ered desirable for a theater and what is considered comfortable for the home can itself lead to several conclusions. One is that viewers of direct-view monitors normally sit too far away to obtain the full impact of programs intended to be viewed in a theater (not to mention that new movies are usually made with a wider aspect ratio than television's 4:3). Another generalization is that viewers of projection sets have a better chance of getting it right. A screen 3 feet wide must be seen from about 5 feet 7 inches to become truly "cinematic." This is close, but not unrealistically so.

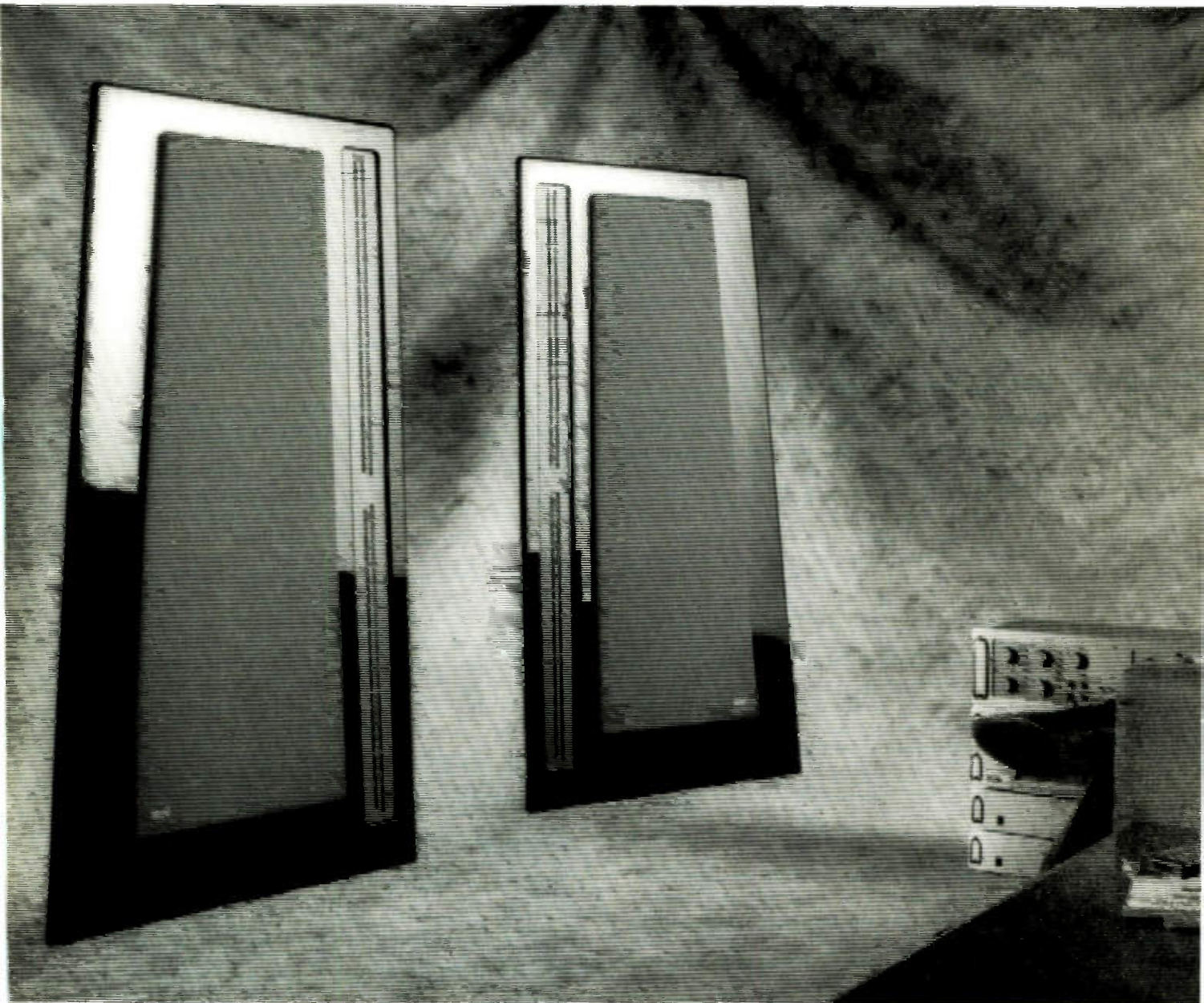
I have tried sitting the SMPTE-recommended distance from several direct-view monitors and have my own observations and conclusions.

- Sitting close does make the picture too bright (Mom was right), in addition to exposing other picture defects.
- Turning the brightness down destroys some picture qualities beyond the monitor's adjustment range.
- One can optimize a monitor for low brightness.
- If a monitor were perfected for close-up viewing, the correct, low-brightness color phosphors could be used.

So, in this case, all roads lead to my pet peeve—improper color reproduction. But the perfectionist's monitor, one with correct color reproduction at moderate brightness levels along with other video desiderata, has yet to be made. This would be a monitor that could withstand close—and I do mean *close*—scrutiny. □



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Q. How can The Amazing Loudspeaker put out so much powerful, extended bass?

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Q. Why use a ribbon driver?

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"Its overall sound is spectacular, its bass performance surpasses that of almost any other speaker one might name."

STEREO REVIEW

Because there's bound to be quite a story behind a speaker that's 5½ feet tall and yet just 1½ inches thick. Especially when Bob Carver has a hand (or rather two hands, both feet and a year or so of lab time) in its creation.

But ingenious design is only our means to an end. The beginning of a dramatic awakening that will re-define for you the very essence of music.

"The image is as wide, deep and multi-layered as I have ever heard. Only Infinity's \$35,000 Reference Standard impressed me more."

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The Amazing Loudspeaker can etch a sonic image so detailed you can almost see rosin drift from a bow onto the polished surface of a violin.

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"It solves certain design problems and achieves certain sonic results with a simplicity and flair that can only be called, well, amazing."

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THE AUDIO CRITIC

It can stun your senses and rearrange your furniture with thunderous salvos of tight, perfectly controlled low bass.

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Sheer wonder.

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Julian Hirsch
STEREO REVIEW

However, if your immediate interest is the sensation of a listening room melting away to reveal the crystalline clarity of pure music, you need only visit your nearest Carver dealer.

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ACCURATE

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Putting DAT In Its Place

By Robert Long

It's only right that the audio world is abuzz over DAT. Digital audio tape is an important technology, and the efforts to keep it out of this country by those who see it as an economic threat have further stimulated consumer expectations. But some of the comments I hear amid the buzzing suggest that not all of those expectations—from either side—are realistic.

Before addressing the hopes of potential users, let me dispose (if I can) of the most important misconception held by DAT's detractors. Some music-industry insiders allege that digital tape will rob musicians and record companies of a fortune in royalties that will be bypassed by unauthorized copying on the new and "perfect" medium. Fear of technology by the music industry is nothing new; it dates from not long after records were introduced. No less a musician than John Philip Sousa stormed in a 1906 issue of *Appleton's Magazine* that recordings would push live music out of sight and out of business. His band then went on to make numerous, profitable recordings (not under Sousa's direction, it should be noted), thereby increasing manifold the market for its music.

It was the same with radio. Initially, the live-music industry protested against the "unfair competition" that occurred each time a record was broadcast. Music unions even forbade the recording of American orchestras. But radio has since evolved as the most powerful promotional medium for recordings. It's so powerful, in fact, that record companies and their agents have stooped to outright bribery in order to get airplay.

At the moment, home taping for noncommercial purposes is absolutely legal, although the record industry wishes otherwise. Of the myriad examples I know of where legal but technically unauthorized copies have changed hands, the vast majority fall into one of two categories. They either whet an appetite, leading to sales of the original recordings that otherwise would not have occurred, or they fall on unresponsive ears that wouldn't have represented a sale in any event. Other home copies (my own dubs of 78s, for instance) reproduce commercially unavailable material that will be replaced by a technically superior commercial copies as soon as one can be bought. None of the above result in a net loss of sales; sales might even be increased, not decreased, by the existence of homebrew copies. Certainly if everybody were taping everything, CD reissues of older material wouldn't be selling as well as they are.

I can't believe that the remaining dubs (mind you, excluding those from commercial pirates, who are another matter altogether) represent any sort of a threat to the music business. That is not meant to condone copies made simply to avoid paying one's share of the costs, of course, which I find unethical. But on balance, the music industry doesn't have real cause for complaint. It should be embracing with abandon a new medium through

which its products can be sold.

So much for the business end. Among would-be home users, the most pernicious misconception seems to be that DAT will somehow preempt the place now enjoyed by the Compact Disc. From the costliness of the DAT medium alone, I don't see how this is possible. In New York, you can buy a CD player for less than \$200, though prices do run to more than \$1,000 for the fanciest models. But that high mark is the *low* end of where DAT deck prices will start. Then there's the cost of the blank tapes: DAT cassettes are the top of the audio-tape quality range and will therefore remain significantly more expensive than even the most costly analog cassettes.

Should high-speed DAT duplication really catch on, there is a chance that prerecorded DAT cassettes would be less expensive to manufacture than the comparable CD. On balance, however, DAT will not be Everyman's medium for quite some time, if ever. The hardware is comparatively costly, and because of the mechanical complexity of a DAT transport and the expense of the data-conversion circuits, it will remain so.

And despite another apparently popular misconception, DAT will not be the instant-cueing equal of the Compact Disc. DAT achieves random-access prodigies by comparison to the cassette (to say nothing of open reels!), but it still must shuttle about the tape to reach its cueing points. The laser pickups of CDs can move almost instantaneously to any cueing point.

A number of my friends seem to believe that digital tapes will be as nearly indestructible as digital discs. But the physical shape of the pits molded into a disc's polycarbonate is more difficult to alter than a tape's magnetic domains. What may be more important in the long run, however, is physical tape damage caused by improper transport operation or by a poorly maintained deck whose encrusted dust and dirt could possibly scratch and score the tape beyond the ability of the DAT error-correction system to compensate. These types of problems have been known to happen with PCM-adaptor recordings made on home videotape machines. Because of the noncontact nature of the CD laser system, damage to the medium by a poor or bad mechanism is rare, though certain technical editors have been known to crush CDs by accidentally closing player drawers. If you want truly archival storage, buy the CD of the same music, if possible.

There are a lot of reasons for recordists to pant over the prospect of DAT. Once it's readily available, it will outflank open-reel analog tape in every respect except easy editing—and even that may yield to reasonably priced home gear before too long. The analog Compact Cassette is bound to hold its own for simple, inexpensive taping. But as the medium of choice for playing commercially recorded music, the CD is in absolutely no danger of dethronement. □



Preparing for a New Season

By Christopher J. Esse

As I write, the baseball exhibition season has come to a close, rookies and veterans alike having awakened the skills that hibernate throughout the dead of winter. No matter how long you've been playing the game, it's important to review the fundamentals—like hitting the cutoff man, backing up the play, and going with the outside pitch. But every year, there are new things to learn—new teammates, new strategies, new opposing players. In a sense, the same applies to autosound, for which each summer is also a new season. Manufacturers will be throwing you many pitches this year, slipping in a few doctored balls with the straight hard stuff. But as seasoned autophiles, you'll guard the plate waiting for a good pitch to hit. Spring training for autophiles begins here, with a team meeting on five fundamental and sometimes confusing subjects.

First, power ratings. Although a standard exists for measuring car-audio amplifiers, many manufacturers choose rating parameters that yield misleadingly high power numbers. Normally, this is not a problem in the home audio arena, where amplifiers tend to be rated similarly in strict accordance with Federal Trade Commission guidelines. Specifically, a home amp will deliver its rated *continuous power* into a load (usually 8 ohms) over a specified bandwidth and with no more than a given percentage of total harmonic distortion (THD). A power spec for a receiver might read: 100 watts per channel into 8 ohms, from 20 Hz to 20 kHz, with less than 0.05 percent THD. Many companies also rate their amplifiers into a 4-ohm load, in which case the power delivered may be nearly twice the 8-ohm rating, depending on the design of the amp. Either way, it's pretty clear what you're getting; more important, you can directly compare the specs of competing home units.

Unfortunately, autosound manufacturers continue to promote overly optimistic power figures. Out of pride in their products, some companies adhere to basic home audio rating practices, but most succumb to the hyperbolic pressures of the marketplace. That's why you should cast a suspicious eye on high-power head units or EQ/booster-amps rated at, say, 25 watts per channel. Deriving that amount of power from a bridged transformerless (BTL) amp—which is what these in-dash models are—is possible only (if at all) by driving the amp into hard clipping, resulting in speaker-killing distortion. A more reasonable maximum output—that is, one accompanied by only a few percent THD—would be on the order of 15 watts per side.

A specific example: A high-power head unit from a certain reputable manufacturer is rated at 16 watts per channel at 1 kHz with 8 percent THD. In fact, that power figure is imprinted on the unit's faceplate. However, you'll find that the broadband spec (40 Hz to 20 kHz) turns out to be 8 watts per channel at a perfectly accept-

able 0.8 percent THD. Since most of us think of amplifiers in home audio terms, this supplemental rating gives a better indication of the amp's prowess.

If all autosound manufacturers rated their amps using the same testing conditions, it would be easier to make effective comparisons. Things are improving in this respect: Power-happy ratings are still widely advertised, but most companies (like the one cited above) supply a variety of supplemental ratings in their product literature that may enable direct comparisons with other brands. Anytime you see an in-dash amplifier that purports to deliver more than 15 watts per channel, keep in mind how that figure has been derived.

Another point of confusion is faders, of which there are two general types. The first affects relative front/back balance by cutting power at one of the outputs; the second takes the signal before it reaches the output stage and divides it between two stereo amps (built-in, outboard, or one of each), thereby permitting the amps to run on all cylinders regardless of the fader setting. You'll find the first type (often called a power fader) used in basic head units with an internal stereo amp. Since you can usually connect four speakers to these two-channel units, the only way to allocate the signal between front and back is to insert the fader at the output stage. Hence, the power fader is basically a variable resistor that absorbs power and dissipates it as heat (you can sometimes feel the heat on the fader knob). The best power faders are disconnected from the signal path when they are in the center position, so that output is simply divided equally between front and back and is not wasted on the resistor.

The second type of fader, usually referred to as either a preamp fader or a dual-amp balancer, is preferable whether you're dealing with two built-in amps, a pair of outboard amps, or one of each. Here, the music signal is divided in the preamp stage before it reaches the power amps. The position of the fader determines how much of the signal will be sent to either the front or the back amplifier. Both amps can therefore generate full-capacity outputs with the assurance that all of it will reach the speakers, which translates to better dynamic range and less distortion all around. Typically, the few head units with integral four-channel amps have the smaller amp up front on the assumption that you'll desire more power for the back.

This brings us to the third topic, outboard amplifiers. A head unit with a preamp fader may have two sets of preamp outputs (pre-outs) whose relative levels are controlled by the position of the fader. In a high-end installation, a moderately rated power amp will be fed by the front-channel pre-outs to drive a pair of front speakers; a heftier amp will run off the back pre-outs to power large full-range speakers or subwoofers (more on the latter to follow). Various combinations of built-in amplifiers and

outboard amps can be used as well, depending on the provisions of the head unit. For example, many head units equipped with a preamp fader contain a low-power amp for two or four speakers and supply one pair of pre-outs. This last arrangement is perhaps the most flexible route to an economical, high fidelity autosound system, since it enables you to start with a modest setup and later upgrade with a more powerful back-channel amp. Note that on some such amplified head units, the fader has no control over the pre-outs.

Admittedly, the story on faders is a complicated one, more so because manufacturers choose different terminology to describe their designs. When shopping for a head unit, therefore, take into account any future upgrades; this way, the salesperson can recommend an appropriate model.

The matter of subwoofers comes to mind when considering an outboard-amp installation. A few head units supply built-in subwoofer crossovers. An easy way to illustrate how these work is to consider our last example: the head unit with a built-in amp and pre-outs for the back. If such a unit provides a subwoofer crossover—essentially a filter that passes only those frequencies below a (usually) selectable point—you can drive one or two subwoofers off an outboard amp and use the radio's amp to power a pair of dash or door speakers for the middle and high frequencies. A more high-end approach is to buy an ampless head unit with two sets of pre-outs so that you can drive the front speakers with an outboard amp as well.

There are several ways to add a subwoofer crossover to your existing system. The first and perhaps most economical is to find an outboard amp with a built-in crossover, of which there are many. Some multichannel amps, in fact, can be set up so that the back channels support a subwoofer (or two) and the front channels pass only middle and high frequencies. (Incidentally, if you're interested in a component-speaker setup, see January's column.) Many equalizers—either powered or passive—supply a subwoofer crossover. Typically, all provide both preamp-

level inputs and speaker-level inputs. Simply run the back-channel output of your radio to the equalizer and select the subwoofer crossover point (if desired—in some models, you can leave the output at full range).

Lastly, I've been seeing a lot in manufacturers' literature about autoreverse mechanisms with "dual azimuth adjustment." First, a word on azimuth. The alignment of a tape head with respect to the tape that passes over it is critical to accurate reproduction, particularly of high frequencies. Azimuth refers to the angle the tape makes with the head gaps. In theory, that angle should be precisely 90 degrees, but a proper azimuth match is essentially ensured if the tape you're playing was recorded on the same deck. If it was recorded on another deck—as would be the case with a prerecorded cassette and anything you play in the car—a good match is less likely. To demonstrate the importance of azimuth, try comparing at home the sonic quality of both sides of a prerecorded cassette played in an autoreverse deck. Frequently, one side will seem to have more extended high-frequency reproduction. This demonstrates how azimuth changes with the direction of play and how, in one direction, the alignment matches more closely that of the deck used to make the prerecorded tape. Welcome to the world of azimuth mismatch.

Nakamichi is the only company I know of that offers an autoreverse car deck (the TD-1200II) that automatically and continually optimizes azimuth. The company also has two unidirectional models (the TD-700 and TD-500) that provide a *manual* azimuth adjustment. The process being used now by many other manufacturers—and first employed by Sony—involves a fixed, corrective repositioning of the head block after it rotates. In this manner, the deck can be set at the factory so that frequency response is optimized independently in both directions for a standard test tape. Although dual-azimuth adjustment does not ensure that all tapes will sound their best on a particular deck, it's certainly desirable.

Autophile spring training may not be as much fun as baseball, but it beats the hell out of cricket. □

Early-Season Favorite

On paper at least, the Concord CX-70 autoreverse cassette/receiver (\$750) looks like a powerhouse. And, lucky for me, it addresses nearly every point discussed above.

The CX-70 is one of the few head units with an integral four-channel amplifier, delivering 4½ watts per side at only 0.08 percent THD. Usually, such a multichannel design is found only in more powerful outboard amps. Furthermore, the CX-70 can be bridged for two-channel operation, in which case its power almost triples to 12½ watts per side. Still, the CX-70's

front panel reads "50 watts," which you should take as an invitation to inspect the specs.

The CX-70 provides two pairs of pre-outs. Unlike most head units, its preamp fader can control any combination of internal and external amps, so power is never wasted. In addition, a subwoofer crossover (at 150 Hz) can be selected for the back-channel pre-out. The autoreverse tape section features a dual-azimuth head, which, as described earlier, enables Concord to fine-tune azimuth independently for each direction of play.

Incidentally, the list of important features does not end here. Add Dolby B, Dolby C, and DBX noise reduction; bass and treble controls each with three selectable center frequencies; full-logic tape controls; a selectable back-panel CD-player input; and an anti-theft, slide-out chassis. For more information on Concord's CX line, contact Concord Systems, 25 Hale St., Newburyport, Mass. 01950. C.J.E.



ONE STEP IN THE MAKING OF A KEF

'For decades, loudspeaker design was a matter of random trial and error. Engineers had no systematic means of identifying and correcting development problems.

'At KEF, computerised testing and computer-aided design have changed all that. For example, KEF's computerised modal analysis ena-

bles me to pin-point troublesome cabinet vibrations. And it helps me determine the most effective countermeasures.

'While computers will never take the place of innovative engineering, they do enable us to examine and perfect loudspeaker performance as never before.'

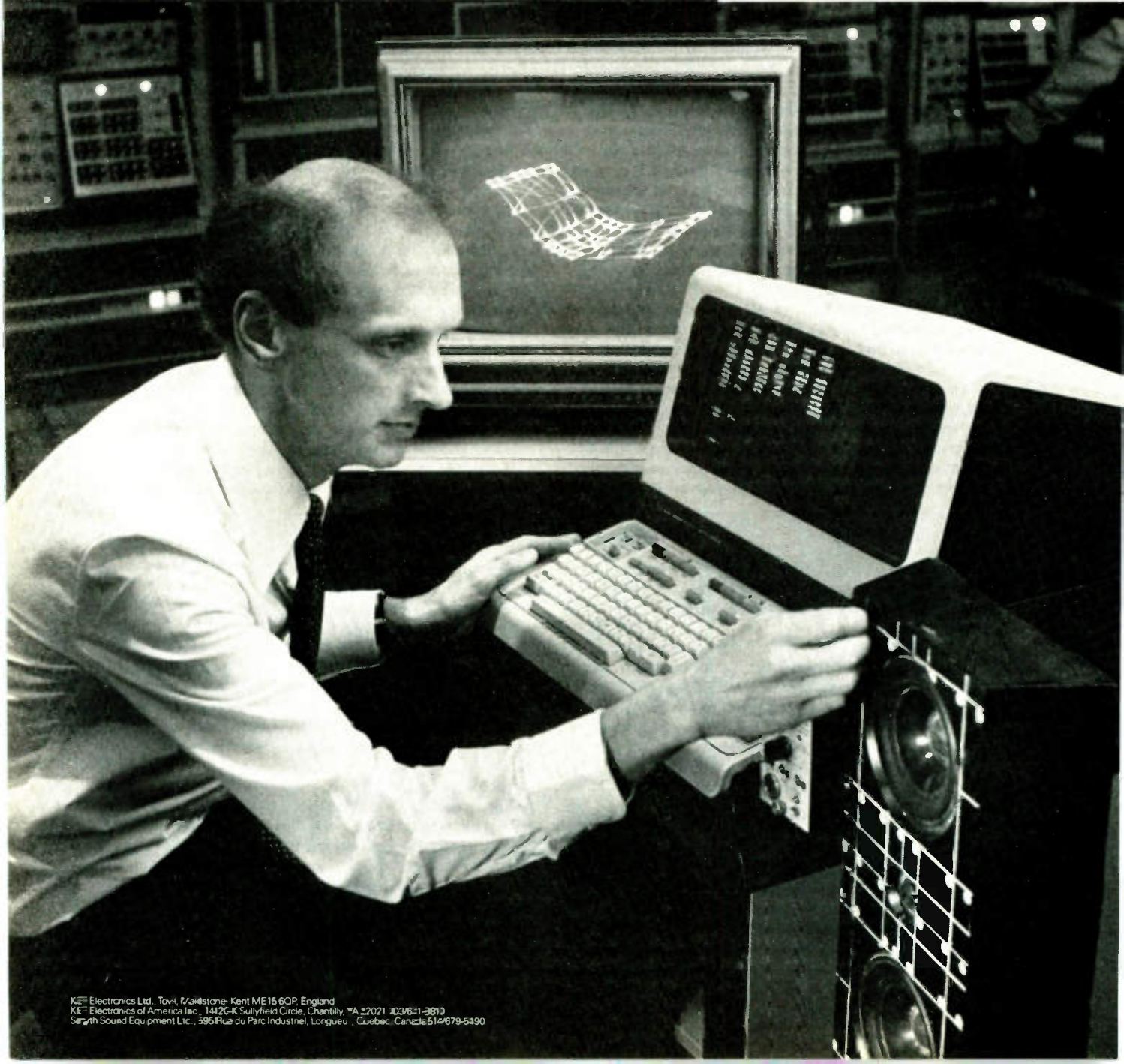


KEF
*The Speaker
Engineers*

'By the time we build the final prototype in wood, we've already "built" dozens on computer.'

— Tim Borton, KEF SENIOR RESEARCH ENGINEER

MODE C40



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

With the exception of one outdoor model, all loudspeakers from Design Acoustics are designated PS, for Point Source. The goal behind each is to produce a "clear, defined signal with no trace of loudspeaker sound"—in other words, as if that signal were emanating from a single, infinitesimally small location (an ideal point source). Such a design seeks to eliminate front-baffle diffraction effects as well as the phase cancellation and relative delay that can occur among the multiple drivers in a typical loudspeaker. More simply put, Design Acoustics aims to eliminate boxy sound.

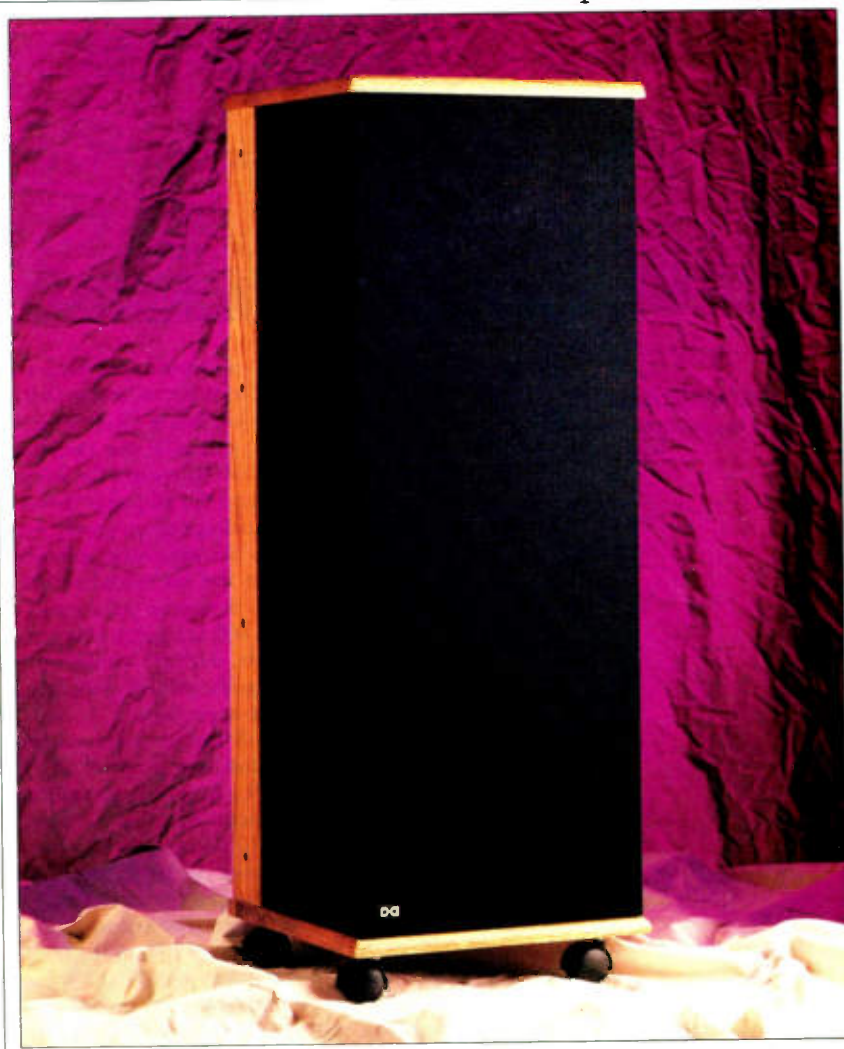
The PS-103 is the top model in a line of six PS systems. Its outward appearance is subdued, with handsome solid-oak endcaps and trim and a full-length, wraparound black grille cloth. Each cabinet can be wheeled about on four casters. Beneath the PS-103's conventional exterior, though, lies an unconventional configuration designed to minimize the baffle area of all three drivers.

A subenclosure in the lower two thirds of the cabinet houses a 10-inch woofer, which fires downward from the base. The casters should not be removed, as they raise the cabinet (and therefore the woofer) a calculated distance off the floor for optimum bass performance. Two horizontal sections within the sub-enclosure form asymmetrical ports to minimize standing-wave resonance. A second, trapezoidal enclosure in the upper portion of the cabinet contains a 6-inch midrange driver and, centered above it, a 1/4-inch dome tweeter. The trapezoidal shape minimizes the baffle area surrounding each driver. Although visible from the back, the upper enclosure is hidden in front by a nonremovable stretch grille.

As a further measure against phase and time-delay problems that might affect stereo imaging, Design Acoustics has chosen nominal crossover points—at 100 Hz and 3 kHz—that fall outside much of the range in which the ear is most sensitive to phase. The company says the woofer actually begins rolling off at 80 Hz (confirmed by Diversified Science Laboratories' measurements) and therefore classifies it as a subwoofer and the midrange driver as a midwoofer.

Inset toward the bottom of the back panel are well-constructed color-coded

binding posts that accept four varieties of speaker connections: bared wire, banana plugs, terminal pins, or spade lugs. There are three pairs of terminals, each linked by a jumper. For normal, full-range operation, the jumpers are left in



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Test Reports

Design Acoustics PS-103 Loudspeaker

place, as they were throughout our testing. If you wish to biamp the system—that is, drive the woofers with a dedicated amp—simply remove the jumpers and make the connections as instructed (when you do so, the woofer's crossover is completely bypassed). Biamping requires the use of an electronic crossover, which divides the output of your preamp for feeding two power amps—one just for the woofers, the other for the mid-

Dimensions: 13½ by 38¼ inches (front); 13¼ inches deep.

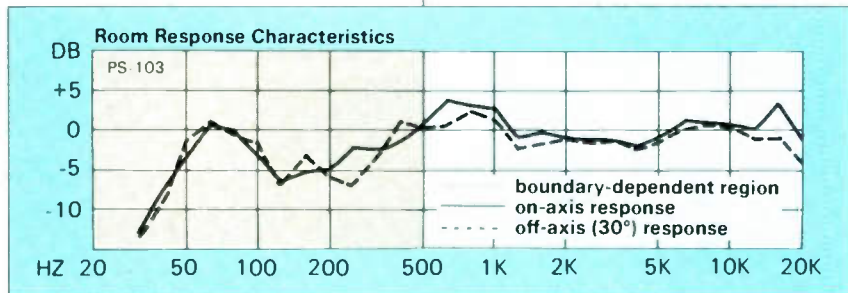
Price: \$950 per pair.

Warranty: "Limited," five years parts and labor.

Manufacturer: Design Acoustics, 1225 Commerce Dr., Stow, Ohio 44224.

range drivers and tweeters. The electronic crossover should be set the same as the one it replaces, at 100 Hz with a slope of 12 dB per octave. Last on the back panel is a tweeter-level switch that can attenuate high-frequency output by approximately 3 or 6 dB.

Design Acoustics suggests you experiment with the placement of the PS-103s in your listening room. DSL made two sets of response measurements—one with the speakers three inches out from the back wall, the other at about three feet away. Our graph, which represents



Sensitivity (at 1 meter; 2.8-volt pink noise)

89 1/2 dB SPL

Average Impedance (250 Hz to 6 kHz)

11.3 ohms

Approximate Tweeter Control Range (re "flat")

+0, -6 dB above 4 kHz

the near position, shows that both the on-axis and off-axis curves remain within ± 4 dB from just below 50 Hz straight out to 20 kHz, except in the range between 125 and 250 Hz (where the woofer is crossing over to the midrange driver). There, response drops down nearly 7 dB on both curves. The only other noteworthy features in the otherwise smooth curves appear in the on-axis trace: a hump between 600 Hz and 1 kHz and a hiccup at 16 kHz. Both are within +4 dB and of little significance in comparison to the dip in the upper bass.

DSL made distortion measurements at its four standard test levels: 85, 90, 95, and 100 dB SPL. At 90 dB, the average distortion—discounting the very deep bass—is only 1/4 percent. While the 1-kHz test frequency yielded figures significantly above the average at all four levels, there were nevertheless no signs of distortion in normal listening. In the 300-Hz pulse power-handling test, the PS-103s swallowed the full output of the lab's test amplifier (equivalent to 27.9 dBW, or 613 watts, into 8 ohms), which

translates to a healthy dynamic range of 117 1/2 dB. Sensitivity measured 89 1/2 dB, about average for a speaker this size.

Impedance averages close to 10 ohms from 20 Hz to 20 kHz. It hits a low of 4.7 ohms at 300 Hz, beyond which it gradually swells to a peak of more than 20 ohms at 2 kHz. Most amplifiers should be able to safely drive the PS-103s in parallel with another pair of 8-ohm-rated speakers. Incidentally, the setting of the tweeter-level switch has only a minor effect on the impedance above 3 kHz.

Listening tests are more important for a loudspeaker than any amount of technical data, which is why we don't look at data until we have completed our listening ritual. But the data can help explain what you've heard. First, the good news. The PS-103s deliver more than adequate (if somewhat loose) bass, even below 50 Hz; clean and extended high frequencies, with no unseemly forwardness; and rock-solid stereo imaging with a fairly wide and deep soundstage. And they easily handle the dynamic demands of the best CDs. I kept the tweeter switch in the flat position, but the two cut positions would be very effective for attenuating high frequencies in a live room. As with any speaker, the PS-103s deliver more bass when moved into a corner, which in effect enables you to tune your setup; their overall tonal quality is not compromised by such repositioning.

However, the PS-103s do not entirely succeed in their mission to escape boxy sound. While the soundstage is broad, vocals—usually prominent at the center of a stereo mix—take on a nasal quality. This effect correlates with our response curves, which show a significant depression in the upper bass that affects the lower registers of voices. Other instruments are sometimes also affected, but to a far less noticeable degree.

That last point is important, since listening to the PS-103s is otherwise pleasant—whether your tastes tend toward Top 40 or Beethoven's Ninth. I was quite satisfied with their low lows and high highs, their good stereo imaging, and their ability to play loud without turning the music to mush. *Christopher J. Esse*

Energy ESM-1 Mk. II Loudspeaker

It has been some time since we reported on the original version of this speaker, which was also the first Energy product HIGH FIDELITY ever tested (January 1986). In the intervening years, Energy has acquired quite a reputation, recently aided by the National Bureau of Standards's use of Energy 22 loudspeakers in its test of the CBS Copy Code sys-

tem. And the company has seen fit to make some distinct improvements in what was already a fine product.

Like its predecessor, the ESM-1 Mk. II is a two-way vented system incorporating a proprietary 8-inch carbon-filled-polypropylene woofer and a 1-inch ferrofluid-cooled dome tweeter. The woofer's surround has been changed

from foam to butyl rubber, and the port has been moved from the front panel to the back—next to the gold-plated five-way binding posts (a welcome step up from the spring-clip terminals of the earlier version). For better power handling and sensitivity, Energy says the woofer magnet is twice the size of that used in the earlier model. Crossover frequency is 2.5 kHz, and the network is said to be a "quasi-fourth-order" design.

As before, the tweeter is located above the woofer and is offset from the center of the front panel. The speakers, sold in mirror-image pairs, are designed for placement so that their tweeters are toward the center of the listening area at approximately ear level. This requires elevating the enclosures about 12 to 16 inches above the floor, for which Energy has suitable wooden stands available (the ST-10, \$40 per pair).

The top, bottom, and sides of the ESM-1 are covered in a black-ash vinyl that, in the words of a company spokesman, is made of "a costly Italian variety." (I wonder if it's from the same company that supplies "rich Corinthian leather.") The front baffle, located behind the removable grille panel, is covered in a silver-gray vinyl. The wood grille panel, covered in black stretch fabric, has beveled inner edges to reduce diffraction. For presumably the same reason, a circle of thin foam surrounds the tweeter.

Diversified Science Laboratories' measurements of the ESM-1 Mk. II show basically similar performance to that of the earlier version, with some substantial improvements. One of these is in distortion. While there remains at all the test levels a frequency region of elevated distortion (the upper bass around 200 Hz), the overall amount of distortion generated is considerably lower than before. At 85 dB SPL, distortion averages less than 1 percent from 50 Hz on up; at 95 dB SPL, the average works out to a bit more than 1 percent over the same frequency range. Distortion in the deep bass remains fairly low even at 100 dB SPL (less than 3½ percent from 80 Hz down to 31 Hz). At this high test level, though, distortion in the 200-Hz region climbs to around 4 to 5 percent. Fortunately, it is not directly audible as such. On our 300-Hz pulse power-handling test, the speaker did accept the full output of the test amplifier (equivalent to 648 watts peak, or 28.1 dBW) to produce a calculated 116.6 dB SPL.

Impedance values have changed slightly as a result of the redesign. Even though DSL's average impedance measurements were 11 ohms (from 20 Hz to

20 kHz) and 12.4 ohms (from 250 Hz to 6 kHz). Energy's lower impedance rating of 8 ohms is justified because of the impedance dips surrounding the woofer resonance frequency of 70 Hz. Minima of 4.6 and 4.4 ohms are reached at 30 Hz and 150 Hz, respectively. These figures indicate that, when running speakers in parallel with the Energys, you should make sure their impedance minima do not fall near the same frequencies.

Overall, the room-corrected ½-octave response of the speaker is quite simi-



TONY PETINATO

lar to, but smoother than, that of the earlier model. The on-axis response, with the speaker one foot off the floor and 9 inches from the wall, is a very good ± 2.5 dB from 40 Hz to 20 kHz. Off axis, the response is less smooth but still follows the on-axis response rather faithfully. When moved out 30 inches from the wall, the bass falls off below 100 Hz (as expected), but the rest of the range is still smoothly reproduced. For the listening tests, we used 14-inch stands placed 9 inches from the rear wall.

In both on- and off-axis curves, you can see an upward turn at the very high-

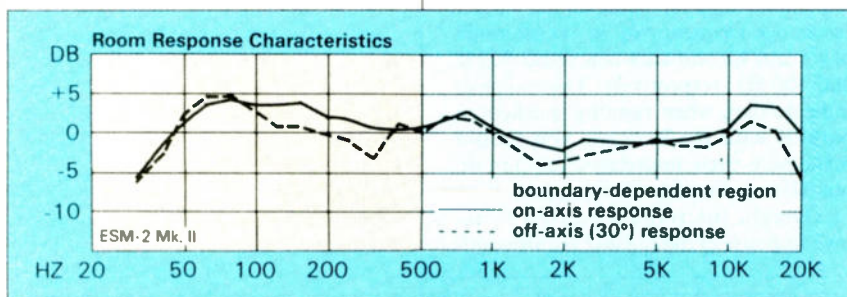
Dimensions: 10½ by 23¾ inches (front), 11¾ inches deep plus clearance for connections and port.

Price: \$450 per pair.

Warranty: "Limited," five years parts and labor.

Manufacturer: Audio Products International Corp., 135 Torbay Rd., Markham, Ont., Canada L3R 1G7.

Test Reports



Sensitivity (at 1 meter; 2.8-volt pink noise)

88 1/2 dB SPL

Average Impedance (250 Hz to 6 kHz) 12.4 ohms

est frequencies (above 10 kHz). I sometimes could hear this rise as a slight tinge of extra brightness on high strings and

listen to—unlike many other two-way systems at an equivalent high volume.

I played a very wide variety of music through the ESM-1s: Gregorian chants, operas, orchestral music, German lieder, string quartets, disco, rap, and pop with male and female vocals. In nearly every case, the sound had very low coloration and rock-steady left/right imaging, as well as a good sense of depth when appropriate. Pipe-organ recordings revealed that the speakers can produce more deep bass than the response graphs would indicate, and that they do not have the upper-bass prominence that can make poorly recorded pop and jazz unbearably boomy. Good performance on such a wide variety of music is rare for any speaker, and it is even more noteworthy on a model in this price range. You should put the ESM-1s on your must-hear list.

David Ranada

cymbals. Most of the time, though, the speaker sounded far better than its price class would have you anticipate. At high volume levels, the textures did thicken slightly, but at no time did the speakers become harsh or otherwise unpleasant to

Pioneer PD-91 Compact Disc Player

With its PD-91 Compact Disc player, Pioneer claims use of the "world's first true 18-bit D/A [digital-to-analog] converter." Even though the PD-91 has been scooped by another true 18-bit machine using the same converter chips, Pio-

more precisely than a 16-bit DAC. Specifically, the same degree of error relative to their respective capabilities constitutes a much smaller absolute error for the 18-bit decoder.

In a way, that's not unlike the principle of oversampling, which the PD-91 also employs. In the PD-91, an eight-times resampling of the basic 44.1-kHz CD sampling rate results in a 352.8-kHz data-reconversion rate; it also pushes switching noise and various conversion artifacts much farther beyond the audio band than is the case with lower resampling rates. Pioneer's resampling technique lowers the performance requirements of the analog filter needed to block these effects and, in the PD-91, permits the filter to be a relatively simple third-order Butterworth design for low ripple and phase shift in the final outputs.

There are a host of other technical refinements as well, some shared with other products in Pioneer's Elite Series and some also available in high-end equipment from other brands. For example, exceptional care has been taken to avoid mechanical resonances, including the use of Pioneer's massive honeycomb-chassis construction. And in addition to vibration-damping feet under the main chassis, a fifth foot at the back directly supports a large power transformer that is further isolated from the chassis by a compliant coupling.

Four separate power supplies feed the electronics via 11 (!) voltage regulators. In contrast, a single digital reference frequency prevents interference that can be generated by numerous timing circuits found in other players. A further hedge

neer's 18-bit entry does offer a measurable advance in the approach to the ultimate CD player: The PD-91's level of performance is unique among CD players HIGH FIDELITY has tested.

As David Ranada explains in "Golden Rulers" [May], an 18-bit D/A converter (DAC) won't resolve finer waveform detail than is present in the 16-bit data on a CD, but it can do the decoding



Dimensions: 18 by 5 inches (front), 17 inches deep including clearance for transformer on back panel

Price: \$1,300

Warranty: 1 mile, two years parts and labor

Manufacturer: Pioneer Electronics Corp. Japan

U.S. Distributor: Pioneer Electronics (U.S.A.) Inc., P.O. Box 1540, Long Beach, Calif. 90810

TONY PATTINATO

All data were obtained using the Sony YEDS-7, CBS CD-1, and Philips 410 055-2 and 410 056-2 test discs

against extraneous noise is the front panel's fluorescent display, which can be switched off once programming chores are finished. However, I never encountered any audio noise attributable to the elegant, uncluttered display (and very little noise attributable to any cause).

In addition to gold-plated analog-output pin jacks, the back panel contains two sets of direct digital outputs—electrical (pin jack) and optical. A front-panel switch permits analog-only, digital-only, or both outputs, so you can defeat whatever is not needed or use both simultaneously.

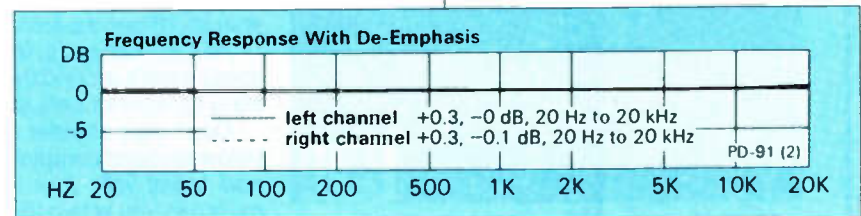
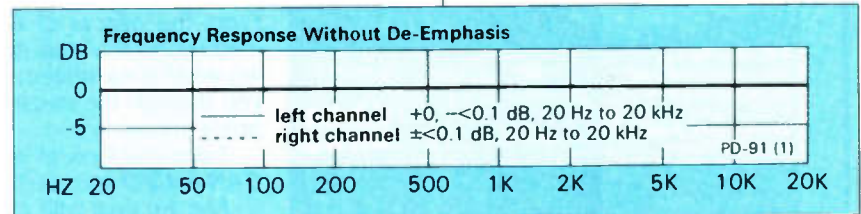
Most of the CD-player operating modes familiar to you are available on the PD-91. The front panel has controls for random track playback, 24-selection programming, index-number cueing, various repeat modes, autospace (which adds three seconds to the interselection blanks), automatic programming for dubbing onto a cassette (whose length you enter into the player, which then programs as many tracks as will fit on a cassette side), and "time fade edit."

This last control employs a function rarely found on CD players—the ability to program by time cues (minutes and seconds). In this case, it's coupled to an automatic fader, so you can (for example) turn the PD-91 into the ultimate in sleep-timers—when time runs out, it won't jar you back to consciousness with a sudden silence. The feature makes a little more sense, however, when you look at the supplied wireless remote, which gives you the ability to manually fade in (from pause) or fade out. This is an elegant touch that's welcome when you're out of reach of the volume control.

Also on the remote are controls for programming as many as eight "music windows"—segments whose beginning and end points can be marked manually (typical phrase-repeat functions allow the definition of only one window). Windowing proved quite fascinating, though its ultimate utility in normal listening is questionable. In programming the function, you can use the track-peek, index-peek, and manual-scan controls to find the passages you want. Each press on MUSIC WINDOW marks a beginning or an end, even though the music continues to play during the process. When you then stop the player and press PLAY once again, your sequence of passages is recalled, neatly faded in at the beginning and faded out at the end of each window. Even if you skip most of the disc in between marked passages, cueing is effortlessly fast—Pioneer rates maximum access time at 1/2 second. Also noteworthy is the seamless joining of contiguous

tracks in the regular programmed mode, though many other current models match the PD-91 in this ability.

Most of the front-panel controls are repeated on the remote. The only omissions I regret are the level control for the headphone jack and the display switch. But given the modest size of the display elements and the length of most headset



cords, neither function is of much use at any distance from the player.

The sound of the PD-91 is, as one would expect, exemplary. Sonically, some CD players have pleased me more and some less. In the exalted realm inhabited by such top-end players as the PD-91, the differences among them seem essentially undemonstrable—at least in comparison with the obvious differences between CDs and LPs. However, Pioneer seems to have left no chip unturned in its quest for perfection.

That progress has occurred is beyond doubt. All of Diversified Science Laboratories' data can be summed up in one statement: No other CD player has measured this well overall, and none has provided so little opportunity for specific complaint. In fact, the worst that can be said of the PD-91's lab tests is that its frequency response with pre-emphasized recordings is only a little better than average among the premium models we've tested (response without pre-emphasis, though, is outstanding). And even this statement quibbles over fractions of a decibel except at the extreme top of the band, where Pioneer's generous oversampling allows filtering that leaves no telltale response droop whatsoever.

Pioneer must be given high marks for pursuing perfection and for having produced a CD player that luxuriously satisfies both sonically and functionally. While the audible gains of 18-bit DACs may not be obvious, the PD-91 is clearly a superior CD player. *Robert Long* ▶

Channel Separation (at 1 kHz)	114 3/4 dB
Channel Balance (at 1 kHz)	+/- 0.1 dB
S/N Ratio (re 0 dB; A-weighted)	
without de-emphasis	112 1/2 dB
with de-emphasis	115 dB
Harmonic Distortion (THD+N; 40 Hz to 20 kHz)	
at 0 dB	< 0.01%
at -24 dB	< 0.01%
IM Distortion (70-Hz difference; 300 Hz to 20 kHz)	
0 to -30 dB	< 0.01%
Linearity (at 1 kHz)	
0 to -80 dB	no measurable error
at -90 dB	+ 1.6 dB
Tracking & Error Correction	
maximum signal-layer gap	> 900 μm
maximum surface obstruction	> 800 μm
simulated-fingerprint test	pass
Maximum Output Level	
line output	2.30 volts
headphone output (50-ohm load)	1.15 volts
Output Impedance	
line output	220 ohms
headphone output	130 ohms

REPORT POLICY

Equipment reports are based on laboratory measurements and controlled listening tests. Unless otherwise noted, test data are provided by Diversified Science Laboratories. The choice of equipment to be tested rests with the editors of High Fidelity. Samples normally are supplied on loan from the manufacturer. Manufacturers are not permitted to read reports in advance of publication, and no report or portion thereof may be reproduced for any purpose or in any form without written permission of the publisher. All reports should be construed as applying to the specific samples tested. High Fidelity and Diversified Science Laboratories assume no responsibility for product performance or quality.



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As we race toward the 1990s, the key word is integration—of audio, video, telecommunication, navigation, and security equipment—and with it comes convenience and better performance



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The 220 is the junior member of the extensive MB Quart loudspeaker line manufactured in West Germany and, to the best of our knowledge, unavailable here until recently. After auditioning the baby of the family, I expect you'll be hearing more about this line in the future. It ranges from a large mini (the 220) through what have traditionally been called "bookshelf" models (two cubic feet or so) to a number of floor-standing tower designs, in addition to car speakers and headphones. Obvious care has been taken with technical design and with the sleek, elegant cabinetry, which is available in an exceptional variety of natural wood finishes.

The 220 is a two-way acoustic-suspension system with a 1-inch titanium-dome tweeter (mounted slightly to the left of the baffle's central axis); below it is a 6½-inch Butyl-surround woofer centered on the baffle. Both are covered by a removable grille made of stretch fabric over a lightweight pressboard frame. Electrical connections are made to heavy-duty multiway binding posts that angle downward from their back-panel alcove for easy visibility and minimum lead protrusion (unless you use banana plugs on the leads).

That's it—no port, no controls, no fuss. What doesn't show is the fine internal construction. The cabinet's ¼-inch multilayered "variable density" panels meet at solid-wood corner pieces for a particularly rigid, nonresonant enclosure. MB Quart takes credit for making its own cabinets and driver assemblies, and I was impressed by the finish and attention to detail lavished on the 220.

Of course, no speaker of this size can fill large rooms with deep bass. Hence, the company offers a subwoofer, the Model 310F (approximately \$749), that has been designed to work with a pair of 220s. Many listeners, though, will be satisfied with the sound as is. What the 220 lacks in deep bass is made up for in clarity and balance.

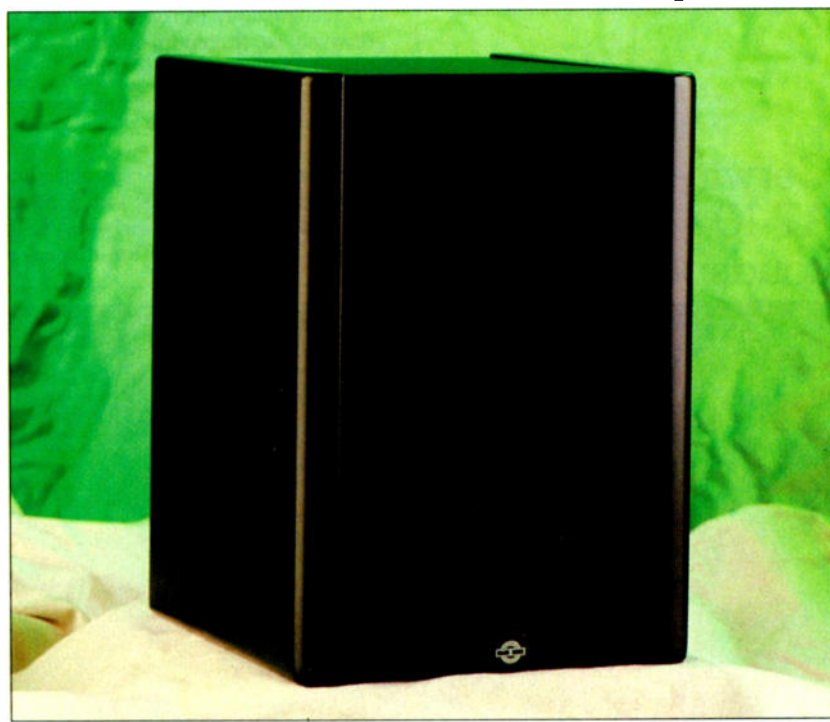
The company suggests placing the 220s on stands about two feet high and keeping them out from the back wall. The specific recommendation—18 inches from the wall—is not one of the Diversified Science Laboratories' calibrated positions, so the lab made measurements both 3 inches and 39 inches from the wall (the latter for the data and response graph shown here). The nearer position produced somewhat rougher response (doubtless because of early reflections); accordingly, the far position was preferred in the listening tests as well.

The measured on-axis response at 39 inches is exceptionally flat, staying with-

in $+2\frac{1}{4}$, $-2\frac{1}{2}$ dB from the 100-Hz band up. Off-axis response is similar, though the trough in the 300-Hz region (attributable, at least in part, to floor reflection) is a little deeper. In addition, the top end gradually slopes away from the on-axis trace, suggesting minor amounts of beaming.

The impedance curve also falls within a relatively narrow compass, lying just above 4 ohms at 20 Hz and at the minimum above the woofer resonance (often used as a rating point) and reaching two

MB Quart 220 Loudspeaker



TONY PETTINATO

maxima: 13.9 ohms at the 100-Hz woofer resonance itself and 15.2 ohms in the crossover region near 1.5 kHz. Throughout the tweeter range, impedance hovers above 10 ohms. Whether measured in our "music band" or across the entire audio band, the average impedance is thus somewhat above 8 ohms, making the 220 a good choice as an extension speaker that can be paralleled with the model used in the main listening area.

Distortion is moderate—meaning it is relatively low for so small a speaker driven to our standard sound pressure levels. At the lowest SPL—85 dB—distortion averages about ½ percent from 100 Hz up. This increases gradually with drive level until, at 100 dB SPL, the average is about 1¼ percent for frequencies above 250 Hz.

The perceived sound is very clean and rather forward. If you've found continental speakers in the past to be rather

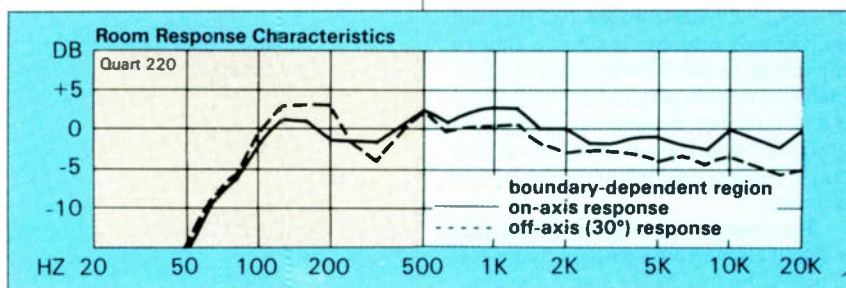
Dimensions: 8½ by 12 inches (front), 9 inches deep.

Price: \$449 per pair in natural walnut or oak, or black or white lacquer; 15 percent additional on special-order woods (rosewood, mahogany, pine, or cherry).

Warranty: "Limited," five years parts and labor.

Manufacturer: MB Quart Electronic Vertriebs GmbH, West Germany.

U.S. Distributor: MB Quart Electronics, U.S.A., Inc., 25 Walpole Park South, Walpole, Mass. 02061.



Sensitivity (at 1 meter; 2.8-volt pink noise)

88 dB SPL

Average Impedance (250 Hz to 6 kHz) 11 ohms

clinical and overbright, you're in for a pleasant surprise when you hear the 220. It is recognizably European, but not aggressively so. Stereo imaging struck me as good, though not outstanding.

Robert Long

Cerwin-Vega AT-10 Loudspeaker

Cerwin-Vega and rock music have grown up together with good reason: From its early days, the company knew how to build speakers

ness of its products using Mozart minuets, tsk-tsk-ing the thunderous sounds emanating from the Cerwin-Vega display. Meanwhile, the crowds were going where the action and the decibels were, and Cerwin-Vega has since demonstrated that it has all the staying power of rock itself.

The AT-10 is a fairly recent addition to a series of Cerwin-Vega "residential" speakers introduced last summer. At first glance, it looks like a traditional bookshelf acoustic suspension model of roughly two cubic feet. But two factors set it apart from that familiar genre: its integral base (clearly indicating that it must stand upright on the floor) and the ducted port on the back panel, which instantly disqualifies it from acoustic suspension status.

The only other back-panel feature is a pair of color-coded, spring-loaded connectors for the electrical leads. The rest of the enclosure is clad in wood-grain vinyl, which wraps over the beveled edges of the front baffle and continues behind the removable grille. The grille's black stretch fabric is supported by a thick pressboard frame.

Behind the grille are three drivers. Centrally located near the bottom of the panel is a 10-inch woofer. Above it, and to the right of the central axis, are a 5-inch cone midrange and a 1-inch Mylar-dome tweeter. Each of these drivers has its own rotary level control on the front panel. Crossover frequencies are listed as 400 Hz and 3 kHz.

The AT-10's power ratings are 5 watts minimum and 125 watts maximum. The first spec would seem a trifle optimistic if this weren't a bass-reflex design. Diversified Science Laboratories' sensitivity measurement of 95.5 dB SPL from a drive level of 2.8 volts (equal to 1 watt into 8 ohms) confirms that you get a



TONY PITTINATO

Dimensions: 14¼ by 28¼ (front), 12½ inches deep plus clearance for grille.

Price: \$620 per pair

Warranty: "Limited," five years parts and labor.

Manufacturer: Cerwin-Vega, 555 East Easy St., Simi Valley, Calif. 93065.

that would reproduce the high acoustic levels demanded by rock, and most of its competitors didn't—at least, not at first. At hi-fi shows in the '60s, the staid audio establishment continued to tout the fi-

lot out for what you put in—one method by which Cerwin-Vega models manage high playback levels when needed. The maximum-power rating is 21 dB louder, implying output of at least 116.5 dB SPL. But on actual pulsed 300-Hz waveforms, DSL got the speakers to produce a calculated peak level of 123.2 dB SPL (above the threshold of pain for normal hearing). There was no indication that the speakers were overtaxed, even though this required power equivalent to 595 watts.

Confirming the impression of unfettered dynamic range is the pattern of the measured distortion, which doesn't increase as rapidly with rising levels as in most speakers we test. At the minimum test level (85 dB SPL), distortion averaged about 1/2 percent from below 100 Hz and didn't run much more than 1 percent even in the deepest bass (where the figures always are the least reliable because of the inherent rolloff in response). At the highest level (100 dB SPL), it averaged about 1 percent to below 100 Hz.

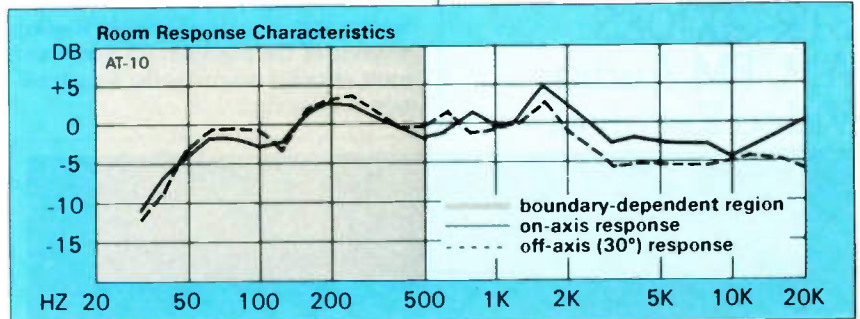
Cerwin-Vega justifiably rates the AT-10's impedance at 6 ohms—between the 7 ohms measured by the lab across the whole audio band and the 5.7 ohms measured across our "music band" (250 Hz to 6 kHz). The impedance curve actually dips to a minimum of 4.0 ohms above woofer resonance (say, in the 200-Hz range), which is sometimes used as a rating point. Just below 30 Hz, in the impedance trough between the woofer resonance (just above 60 Hz) and that of the port (below 20 Hz), the curve also hits 4.3 ohms. The maximum in the audio band is at the woofer resonance. Impedance values in the treble vary between 4.3 and 11.2 ohms, depending on the level-control settings. With the controls centered, the impedance curve is quite flat, lying between about 6 and 10 ohms from 1 kHz up.

The controls seem to do relatively little. Turned all the way up, the tweeter control does supply about 5 dB of boost (6 dB at 10 kHz, as measured by DSL), but its minimum setting and both extremes of the midrange control alter response only slightly. Furthermore, the measured midrange alterations occur only in the region of the 3-kHz crossover—not across all of the frequencies handled by the midrange.

A clue to why this occurs may be visible in the lab's near-field driver measurements, which show a peak near 3 kHz in the midrange driver's response and considerable overlapping of the midrange and woofer at lower frequencies. In the overall response (as shown in our graph, for a speaker nine inches from the back-

up wall), the peak is an octave lower. The near-field measurements, however, indicate that much of this energy may be coming from the top of the woofer range, rather than from the midrange driver.

On the basis of these measurements and my listening, I cannot say that the AT-10's midrange is particularly smooth or uncolored. Rather, it is lively and somewhat forward—and therefore



appealing on much music, particularly pop. But for a listener who, like me, is strongly oriented toward acoustical music, it constitutes the least attractive element in a design that otherwise has much to offer. Alternative settings of the midrange and tweeter controls do little, if anything, to alter the intrinsic character of the speaker.

The owner's manual, though useful and well written, applies to all of the company's residential speakers and therefore does not indicate specific room positions for the AT-10. It does address the proposition that the tweeters should be near ear level, however, so I tried a low stand. The stand's influence on midrange coloration was anything but salubrious. The AT-10 clearly is designed for floor placement and should be used in that way. The choice of distance from the backup wall is a question of taste. The vent needs some breathing room, of course, but the lab's nine inches is plenty for that purpose. When the speaker is placed farther out in the room, the bass is less prominent and extended than the graph implies. But the bass is sufficiently strong and well defined that some of it can be spared in the interests of crisper imaging (which would be made possible through a placement that avoids early wall reflections).

The top treble and the deep bass are both smooth and very extended—unusually so for a speaker of this size and price—and the dynamic range is exceptional. These salient strengths of the AT-10 should win it many admirers, particularly among listeners who lean toward pop and rock—where its qualities show to best advantage.

Robert Long ▶

Sensitivity (at 1 meter; 2.8-volt pink noise)

95.5 dB SPL

Average Impedance (250 Hz to 6 kHz) 5.7 ohms

Approximate Tweeter Control Range (re "flat")

+5, -1 dB, 4 to 15 kHz

Approximate Midrange Control Range (re "flat")

+2 1/2, -1 dB, 2.5 to 3.5 kHz

ABOUT THE dBW

We currently are expressing power in terms of dBW—meaning power in dB with a reference (0 dBW) of 1 watt. The conversion table will enable you to use the advantages of dBW in comparing these products to others for which you have no dBW figures.

WATTS	dBW	WATTS	dBW
1.0	0	32	15
1.25	1	40	16
1.6	2	50	17
2.0	3	63	18
2.5	4	80	19
3.2	5	100	20
4.0	6	125	21
5.0	7	160	22
6.3	8	200	23
8.0	9	250	24
10.0	10	320	25
12.5	11	400	26
16.0	12	500	27
20.0	13	630	28
25.0	14	800	29

Sony STR-GX10ES AM/FM Audio- Video Receiver



Dimensions: 18¼ by 6¼ inches (front), 15 inches deep plus clearance for controls and connections.

AC Convenience Outlets: One switched, one unswitched (100 watts max. each).

Price: \$1,200.

Warranty: "Limited," three years parts and labor.

Manufacturer: Sony Corp., Japan.

U.S. Distributor: Sony Corporation of America, Sony Dr., Park Ridge, N.J. 07656.

Though it is small in comparison with the industrial supergiants of the electronic home-entertainment business, Sony has performed wonders in its 40-year history. From the transistor radio and the Walkman to the Compact Disc and the videocassette, the company has often called the tunes to which its elephantine competitors have danced. Although the STR-GX10ES may not be as preemptive as Sony's finest inspirations, it is nonetheless the flagship receiver of the premium ES Series and most certainly continues the Sony tradition of creativity.

tape deck) has only input connections. In addition, a set of composite- and S-video outputs are supplied to feed a monitor.

If "S" stands for Super (as in S-VHS), it also stands for System, as in Control System (two back-panel connections) or System Commander (the supplied RMP103 wireless remote control, which runs on four AA cells). The receiver can be used as the central control unit in an all-Sony system and, for this purpose, has two Control-S outputs: a four-pin male connector for running audio components and a coaxial jack for video units.

Most owners will probably find the infrared remote control more useful because it can run the basic functions of a VCR, TV set, CD player, audio tape deck, and the receiver itself. It has three operating modes: Sony codes for compatible Sony components; "user standard," which can be programmed to the codes for components of other brands; and the "learning" mode by which such codes can be memorized. To accommodate all this, the remote has 54 push-buttons, two LEDs, and a three-position switch, all on a panel measuring nearly 4 by 7 inches.

At first glance, the remote's only important omission appears to be a recording selector like the one on the GX10ES's front panel. But with the remote, you can control recording from multiple sources by setting the front-panel recording selector to SOURCE and switching the source via the remote. With this setup, the source selected for listening (and viewing) will be fed to all of the recording outputs.

In addition to OFF (which prevents unused decks from loading down the signal feed), the front-panel recording selector has four dubbing options: TAPE (intended for an audio deck), DAT, VIDEO 1, and VIDEO 2. In each case, the deck used as the dubbing source receives no dubbing feed, so you won't experience feedback from a careless setup. In order to monitor the dubbed-to deck's output, you can choose it at the main source selectors.

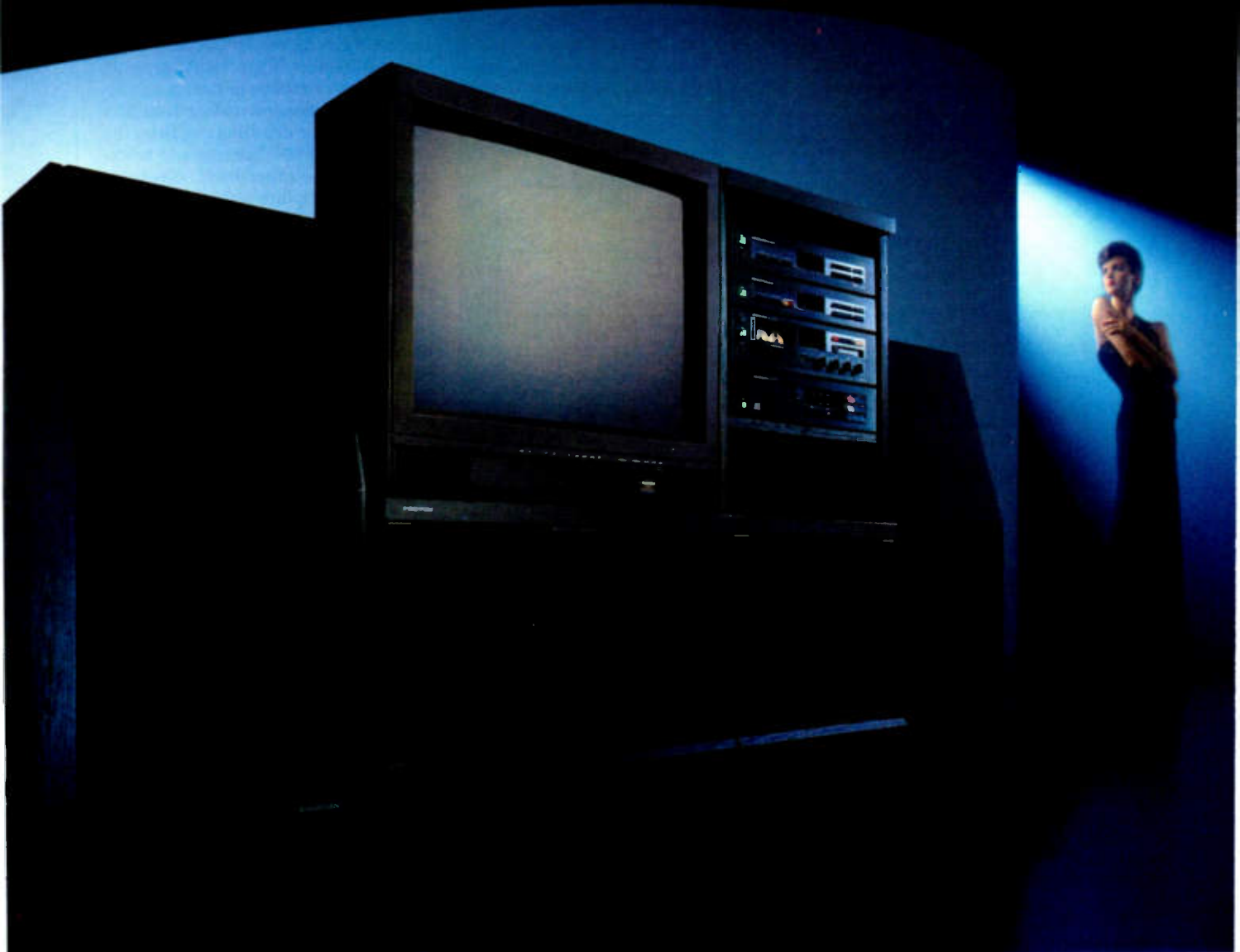
Such off-the-tape monitoring isn't possible with the recording selector set to SOURCE and with the deck operating from any of the regular tape connections. But the GX10ES also supplies a set of "adapter" inputs and outputs that are switched at both the front panel and the remote. Patch your monitoring deck to these jacks, and you can monitor from the tape at will. Unlike many signal-processor loops and all pre-out/main-in connections, the adapter loop comes ahead of the volume control; hence, lev-

When we say "audio-video receiver," we always mean a model that will accept and route composite-video signals as well as audio signals. (A model that also tunes television signals would probably be called an AM/FM/TV audio-video receiver.) The GX10ES is the first audio-video component we've tested to offer S-video fittings that, in common with all Super VHS (and ED Beta) hardware and a growing number of monitor/receivers, maintain luminance (detail) and chrominance (color) components as separate, noninterfering signals.

On the back panel, each set of video connections consists of a composite-video pin jack, an S-video jack, and a pair of pin jacks to carry stereo audio. VIDEO 1 and 2 each have full sets of inputs and outputs for recording and playback with VCRs. VIDEO 3 (subtitled CD-V, even though it's equally appropriate for a regular Laserdisc-only player or a play-only

TONY PETTINATO

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300 Series Remote-Controlled Components with Dynamic Power on Demand™ (top to bottom) AM-300 Stereo Amplifier, AT-300 Stereo Tuner, AD-300 Cassette Deck, 830R CD Player

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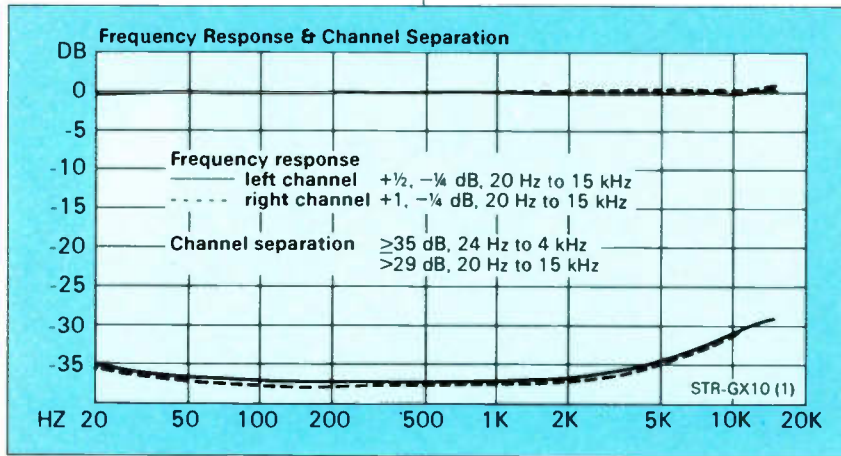
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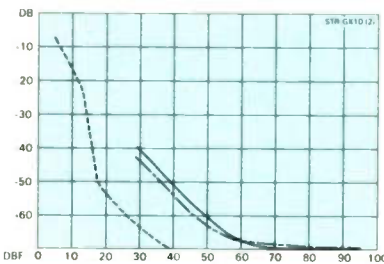
Test Reports

FM Tuner Section

Except as indicated, data shown with sensing feature off.



Sensitivity & Quieting



Stereo sensitivity (for 50-dB noise suppression)		
39 1/4 dBf at 98 MHz, with 0.37% THD+N		
(40 1/2 dBf at 90 MHz, 38 1/4 dBf at 106 MHz)		
Mono sensitivity (for 50-dB noise suppression)		
17 3/4 dBf at 98 MHz		
Muting threshold		
31 or 41 dBf		
Scan threshold		
33 1/2 or 42 1/2 dBf		
Stereo threshold		
30 or 39 1/2 dBf		
Stereo S/N ratio (at 65 dBf)		
69 dB		
Mono S/N ratio (at 65 dBf)		
17 3/4 dB		
Capture Ratio		
2 1 dB		
Selectivity		
alternate-channel	68 1/4 dB	
adjacent-channel	12 dB	
Harmonic Distortion (THD+N)		
	stereo	mono
at 100 Hz	0.26%	0.11%
at 1 kHz	0.18%	0.06%
at 6 kHz	0.30%	0.08%
Stereo Pilot Intermodulation		
0.06%		
Intermodulation Distortion (mono)		
0.03%		
AM Suppression		
64 dB		
Pilot (19 kHz) Suppression		
72 1/2 dB		
Subcarrier (38 kHz) Suppression		
85 3/4 dB		

els fed to the deck will be comparable to those at the regular tape-out jacks and be unaffected by the volume setting. (Back-panel pre-out jacks are also included, in case you want to run, say, a separately amplified subwoofer system.) Simulcasts are handled by the now-standard means

measured by Diversified Science Laboratories, are at 14 1/2, 33, 40, 46 1/2, and 62 dBf.

Measured performance of the tuner section is mostly very good. Since Sony claims a number of circuit refinements that address precision in tuning and filtration in addition to avoiding distortion and noise in the decoding circuitry, the excellent THD+N figures are to be expected. On the other hand, ultimate-quieting and capture-ratio figures are a little disappointing for this class of equipment. Selectivity splits the difference by being exceptional in the adjacent-channel figure but merely good in that for the alternate channel.

The data, however, do not appear to be as representative as we would like. When we began testing, we found that Sony had supplied a preproduction engineering sample without an instruction manual, a remote control (which arrived later), or an AM antenna. For some time, we struggled to understand what SENSE was supposed to do. From the lab data, it appeared to be little more than a fixed channel-blend control, except for an unusual increase in FM noise at signal strengths of 65 dBf and above when activated. Sony now suggests that if this feature had been working correctly, the GX10ES's quieting curve would have responded to signal strength more noticeably and rationally. I can only hope, therefore, that the measured sample is truly anomalous in its behavior and is not representative of a store-bought unit. (One obvious last-minute change in the test sample is the FM input on the back panel: a threaded F connector to mate with the antenna-download and cable-system standard in this country.)

The phono-preamp section has MM/MC options for fixed- or moving-coil cartridges, respectively; both are switched on the front panel. The latter introduces a small but very broad rise throughout the bass and midbass; the former rolls off slightly in the deep bass. Otherwise, their responses are very flat. There is little infrasonic rolloff (almost none for the MM option) to help control warp-frequency output. The switchable infrasonic filter helps, but it isn't very sharp. And its influence is visible almost up to 1 kHz in DSL's response trace; the curve is down 1 dB in the region around 60 Hz.

Of the three tone controls—treble, midrange, and bass—the first and last both have switchable inflection points. At its 6-kHz setting, the treble influences only the top of the range (with maxima of about 7 or 8 dB at 15 kHz); the 3-kHz setting moves the action down an octave

of first switching the video source and then overriding its audio by choosing an audio-only source (in this case, the built-in FM tuner), which leaves the video unaffected.

The tuner offers four tuning-mode switches. The first switch selects either manual tuning (by 0.1-MHz half-channel steps on FM or 10-kHz full-channel steps on AM) or automatic tuning (to seek the nearest strong station). The second switch chooses between two threshold levels for automatic tuning, muting, and the stereo reception mode—adding about 10 dB to each in the high setting, as documented in the data. The third switch, marked SENSE, invokes a channel blend designed to increase as signal strength drops, thereby reducing noise on weak stations. The last tuning-mode switch selects either automatic mono/stereo FM switching and muting or mono-only reception with no interstation muting. In these features, Sony has included as much as ±2 dB of "hysteresis" (in a sense, electronic sticktion) so that a minor change in signal level won't trip the threshold. This minimizes the amount of automatic switching during borderline reception.

The tuner's station presets, which can hold a total of 20 stations in any AM/FM mix, retain not only the frequency of the programmed stations but their tuning parameters as well. An aid to understanding and using these parameters—and a significant one if you use an antenna rotator—is the multisegment signal-strength indicator in the display area. The thresholds of its elements, as

and delivers maxima of 11 to 12 dB at 15 kHz. The midrange control is firmly centered on 1 kHz, where its range is about ± 14 dB, though it has some influence throughout the audio range down to 30 Hz. At its 400-Hz setting, the bass control shelves at about ± 8 dB below 200



The GX10 supplies S-video connections.

Hz or so, with minor influence above 1 kHz; when set to 200 Hz, the range is slightly less and the frequency band affected not quite an octave lower. Otherwise, behavior is unusually predictable, with evenly spaced changes in response to each calibrated rotation point.

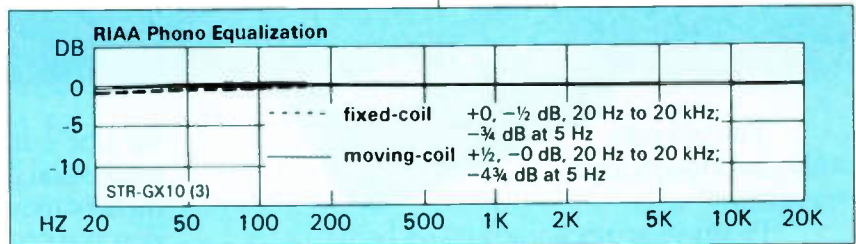
The loudness compensation is not level-dependent: It introduces a fixed boost of almost 10 dB (relative to response in the region around 1 to 2 kHz) below 100 Hz and another of almost 5 dB above 15 kHz or so. Sony has chosen to make loudness compensation available even when you switch the receiver to its source-direct operating mode—a setting intended to provide the most direct possible signal paths for the purest possible reproduction. Also available in the source-direct path is the infrasonic filter. Unavailable in source-direct, however, are the tone controls, the balance adjustment, and the mono/stereo switch needed to feed both speakers from mono-sound video sources. From the viewpoint of our test procedures, the only problem with these design choices is that balance couldn't be trimmed for measurements in the source-direct mode. The channel disparity at the volume setting required for the distortion test measured a hair less than 1 dB.

The "Spontaneous Twin Drive" imprinted on the front panel refers to the GX10ES's power-supply design. The feature includes separate rectification and voltage regulation for the voltage-amplification stages (the majority of those in such a receiver) and for the final, current-output stage. The purpose is to prevent voltage sags created by heavy current drains at the speaker outputs

from distorting waveforms passing through earlier stages. To further prevent undesirable cross-influences, voltage regulation for the control circuitry is independent of that for the audio.

Like most of its Japanese competitors, Sony seems to be concerned with the possible adverse effects of physical vibration on signal purity. Its solution is called the G Chassis. Molded "in a sound-absorbing design" of a resin composite that includes calcium carbonate (marble) and glass fiber, it is claimed by Sony to be 2,000 times stronger than steel.

More practical, at least for some users, is Sony's 2-ohm rating of the power amplifier. Although DSL's dynamic-power measurements fell a little short of the actual ratings (possibly because of a different measurement approach), they confirm the basic premise of Sony's figures: The GX10ES delivers more current, and hence more power, as the load impedance drops to and below the 4 ohms at which so many amps begin to falter. The power provided is certainly substantial, even for a super-receiver, no matter how you slice these figures. Dis-



tortion is commendably and quite inaudibly low.

If our frequency-response figures look a little confusing, it's because the GX10ES's behavior is a little out of the ordinary. The tighter characterization, extending only to 43.1 kHz, falls within a spread of $\pm 1/2$, -0 dB. Normally, there is a rolloff beyond the end frequencies of this characterization, so that the positive deviation remains the same for the looser (-3 -dB) description. But here, a peak in the receiver's ultrasonic response brings the maximum deviation to $+1/2$ dB. This behavior, though unimportant to audio quality, is unusual and, again, may be representative only of our test sample.

What we can be sure of is the basic tenor of our findings, which document the STR-GX10ES as an exceptionally powerful, capable, handsome, and well-thought-out audio-video receiver. Furthermore, it is a tribute to the design and organization of the front panel that there was little I couldn't fathom without a manual.

Robert Long

Amplifier Section

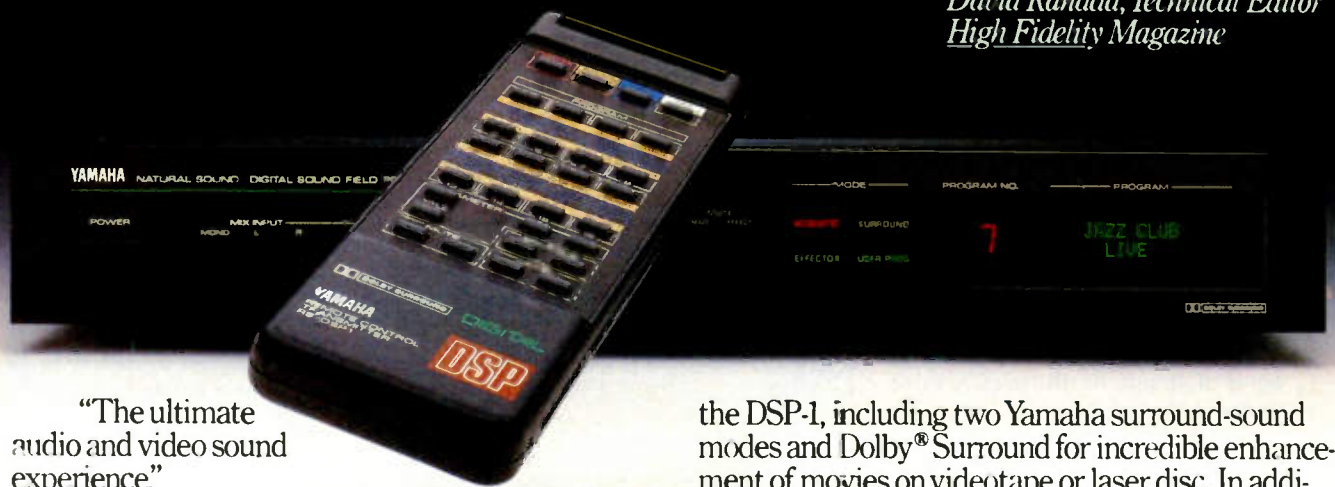
Rated Power (8 ohms)	
	21.8 dBW (150 watts)/channel
Output at Clipping (at 1 kHz; both channels driven)	
8-ohm load	22.2 dBW (165 watts)/channel
4-ohm load	23.6 dBW (230 watts)/channel
Dynamic Power (at 1 kHz)	
8-ohm load	23.3 dBW
4-ohm load	25.2 dBW
2-ohm load	26.2 dBW
Dynamic Headroom (re rated power; 8-ohm load)	
	+1.5 dB
Harmonic Distortion (THD; 20 Hz to 20 kHz)	
at 21.8 dBW (150 watts)	$\leq 0.010\%$
at 0 dBW (1 watt)	$< 0.01\%$
Frequency Response	
	+1/4, -0 dB, < 10 Hz to 43.1 kHz
	+1 3/4, -3 dB, < 10 Hz to 195 kHz

Sensitivity & Noise (re 0 dBW; A-weighting)

	sensitivity	S/N ratio
aux input	11.7 mV	75 dB
fixed-coil phono	0.19 mV	72 1/2 dB
moving-coil phono	12.5 μ V	67 dB
Phono Overload (1-kHz clipping)		
fixed-coil phono		130 mV
moving-coil phono		8.5 mV
Input Impedance		
aux input	46k ohms	
fixed-coil phono	49k ohms, 425 pF	
moving-coil phono	100 ohms	
Output Impedance (to tape)		
from aux input		1,250 ohms
from phono inputs		1,300 ohms
Damping Factor (at 50 Hz; re 8 ohms)		115
Channel Separation (at 1 kHz)		62 1/4 dB
Infrasonic Filter		-3 dB at 16 Hz; ≈ 6 dB/octave

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David Ranada, Technical Editor
High Fidelity Magazine



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“Sound improvement ranged from substantial to mind-boggling.”

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Sounding Off



*An Interview
With James Winey
Of Magnepan, Inc.*

By Gordon Brockhouse

Perhaps more than any other person, James Winey can be credited with present-day interest in high-end dipole speakers. The Minneapolis-based Magnepan, Incorporated—of which Winey, fifty-three, is president and founder—manufactures six different models of Magneplanar speakers, ranging in price from \$495 to \$3,800 per pair. All are dipole radiators: They produce sound from both the front and rear, with the rear output (the back wave) out of phase with the radiation from the front. And all employ the planar-magnetic principle developed by Winey.

Winey's interest in audio dates back to his days as a student at Iowa State University during the '50s. After obtaining an engineering degree, he went to work for 3M. Audio remained a hobby, but an important one—he built up his own system using the best components of the day, including KLH Model 9 dipole electrostatic speakers. "The first time I heard them, I fell in love with dipole sound," he recalls. "[Dipoles] seemed far more real in terms of reproducing the actual musical performance." Thus began Winey's fondness for dipole radiators.

The planar-magnetic principle first occurred to Winey in 1966 while he was working for 3M. "One day, the light bulb just went on," he recalls. "By 1969, I had perfected it to the point where I felt I had to do something with it commercially." That year, he quit his job and formed his own company, although it took another two years to turn his idea into a commercial product. The Tympani I hit the market in 1972. Since then, more than 100,000 pairs of Magneplanar speakers have been sold.

GB: *Can you explain how a planar-magnetic driver operates?*

JW: It's a rather simple principle, really: In a strict sense, it's a dynamic speaker [with the coil unwound and spread over a thin, flat diaphragm]. The front of the driver consists of a perforated pole piece, making it acoustically transparent. Strip magnets are laid out in rows on the pole plate along the full length of the panel, in an alternating north-south, south-north configuration. A typical

midbass driver might have 25 or 30.

Stretched over that is a Mylar diaphragm, $\frac{1}{4}$ to $\frac{1}{2}$ mil [thousandth of an inch] thick. It's spaced to leave room for vibration. Bonded to the diaphragm is a [conductive] voice grid, which traverses the diaphragm in a zigzag manner. It changes direction as the magnet polarity reverses, so that as the current in the grid moves in a given direction, the diaphragm is given a consistent push.

GB: *Since you began operation, oth-*

er companies have brought out loudspeakers that are similar, at least superficially. Some claim advantages, like the company that uses magnets on both sides of the diaphragm. How do you differentiate your products from these?

JW: Because of possible conflict with our patents, most of the other speaker companies have done something to make theirs different from ours. But having magnets on both sides of the

(Continued on page A4)

"Polk Has Triumphed."

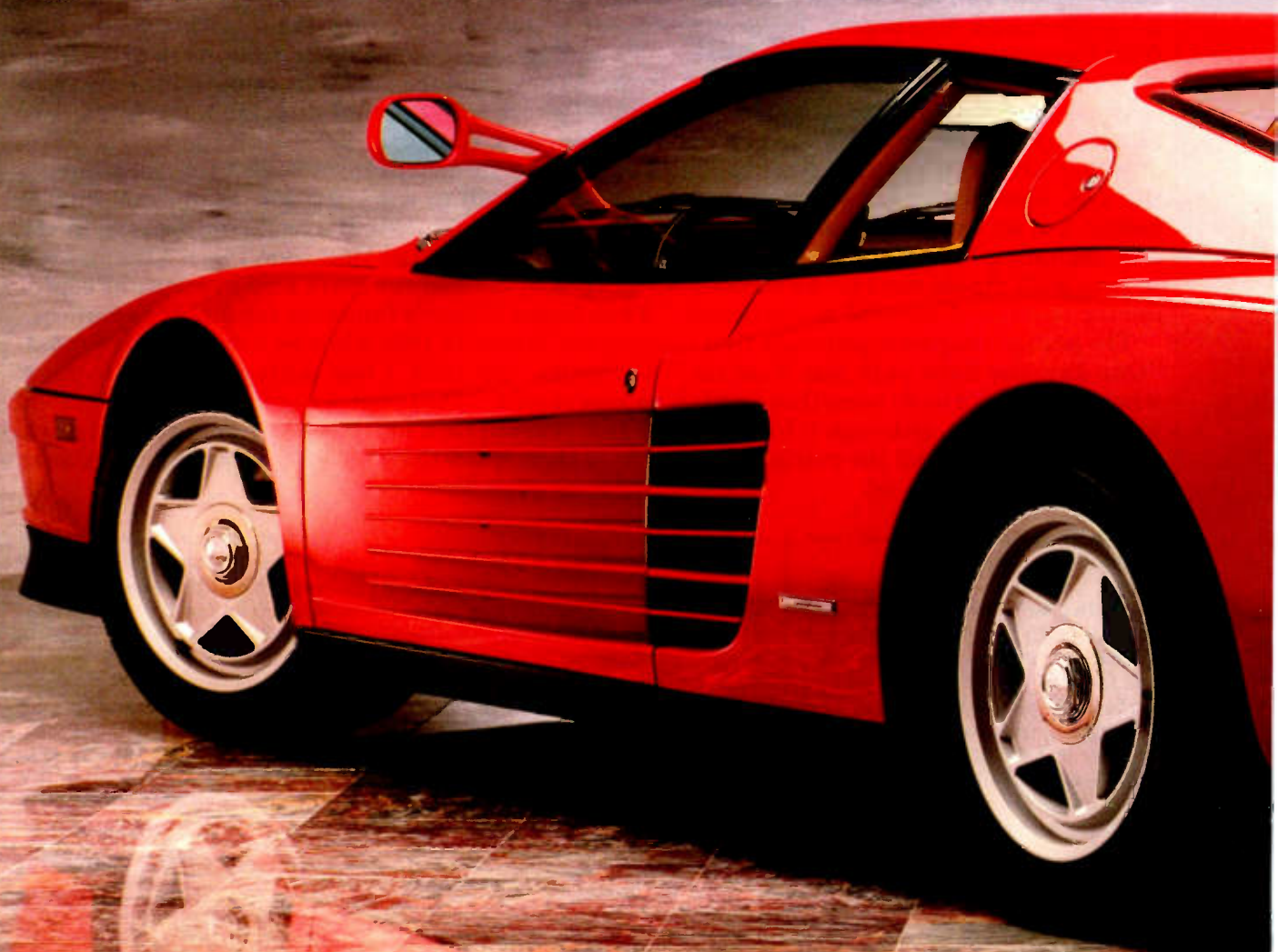
CAR STEREO REVIEW

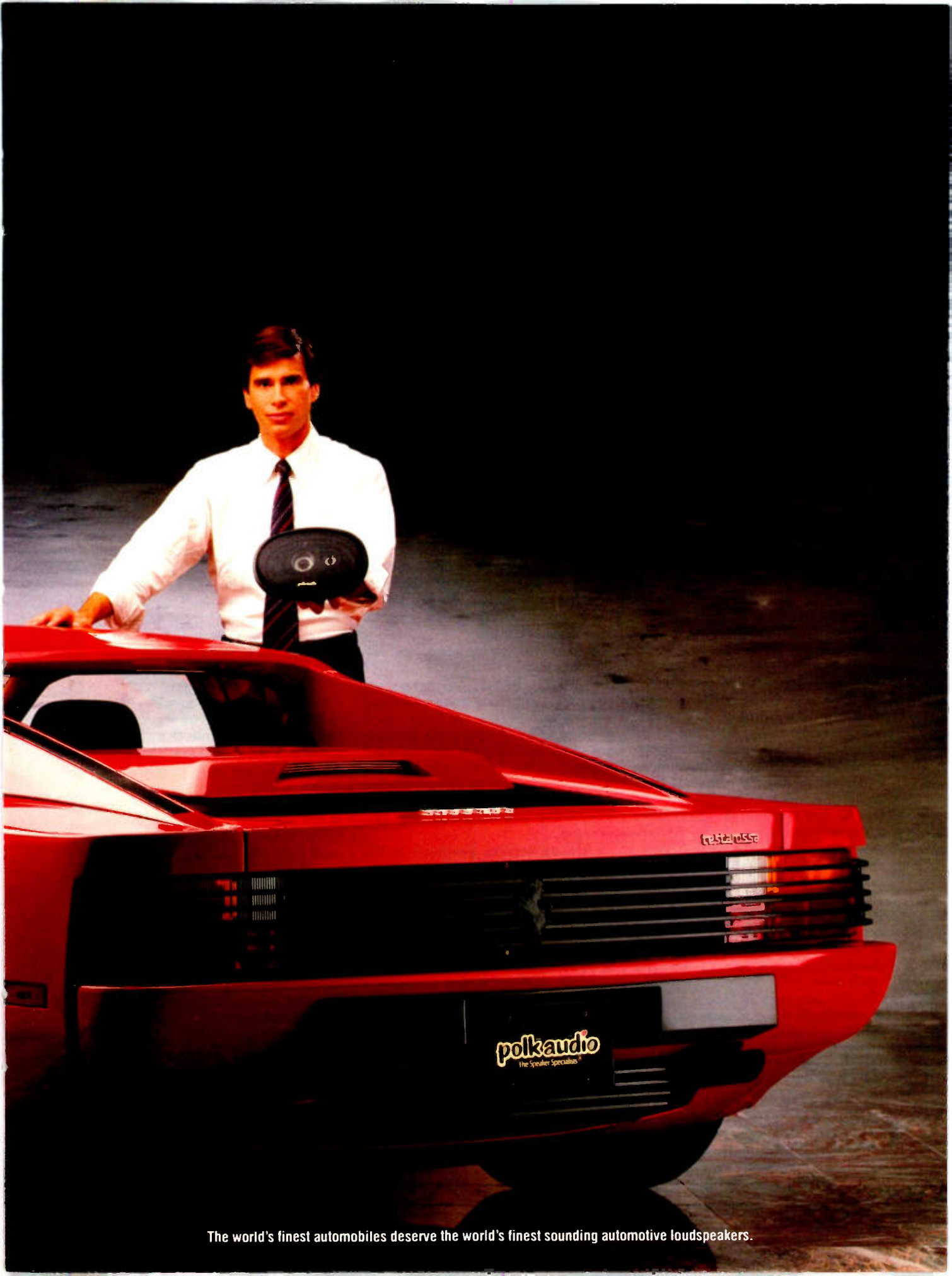
Introducing Matthew Polk's New SDA Mobile Monitor Systems

Matthew Polk has a passion for perfection in the cars he drives, and the speakers he creates. His astonishing new SDA Mobile Monitor Speaker Systems combine the awesome sonic benefits of his revolutionary SDA True Stereo technology with the superior sound of his Grand Prix award winning Mobile Monitor loudspeakers. Car Stereo Review, the definitive authority on the state-of-the-art in autosound, raved, "It's like jumping into hyperspace."



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(Continued from page A1)

diaphragm does not keep their speakers from conflicting with ours. My original patent is very broad. We were allowed 48 claims, which is incredible.

Probably the first thing that was anywhere similar was Infinity's EMIT. But it wasn't a dipole radiator. It only put out sound in one direction and absorbed the back wave. Other variations that used dipole operation left the diaphragm loose. With a tight diaphragm, we can control fundamental resonances very accurately. Every full-length diaphragm we've made is broken up into several different-size sections, each with a different fundamental resonance. This gives you a very smooth bottom end instead of one big juicy spot. We also use our driver all the way down. Drivers that have been left loose and floppy can't do that. You get resonance problems and breakup.

Another patent involves having more than one driver on the same diaphragm. Along one edge, we specialize the magnet and voice-grid layout—in terms of size and diaphragm clearance—for midrange or high-frequency applications. We make the diaphragm in this area very lightweight for good transient capabilities and very narrow for excellent horizontal dispersion.

This has tremendous advantages in the crossover area. Crossover components inevitably introduce phase shift. We have a mechanical connection, so there's an inclination for the different areas of the diaphragm to stay in phase. That's one reason our products have often been described as seamless. They are just that: Mechanically, there is no seam between the drivers.

GB: *Did you have to take measures to avoid interference among the different operating regions of the diaphragm?*

JW: In the MG-III, the midrange is on the same diaphragm as the bass. Then we go to our ribbon tweeter. Our midrange and tweeters are always over at one edge, where there's very little motion of the diaphragm because of bass frequencies. But we felt we had a little bit too much inter-

play, because we were using that midrange clear down to 400 cycles. We tied part of the diaphragm down to avoid this intermodulation.

GB: *What have you done to refine the original design?*

JW: While the basic magnetic circuit has stayed the same, we have made one dramatic improvement—a 60-percent increase in the open area of the pole plate. That opened up the high end, which was suffering from too much acoustic loading.

It had been our practice to have two wraps of our "coil" in the middle of the diaphragm. Since the middle of the diaphragm has to move the farthest, we thought we'd put a little more driving force there. It worked, but it also created a problem. The extra mass in the middle increased the amplitude of the fundamental resonance. So we spread those extra runs to different locations. We got deeper bass without a strong fundamental resonance to control.

GB: *Why did you decide to use ribbon tweeters?*

JW: We felt the very top end needed improvement. In a sense, we had worked with ribbons for many years. We had tried to eliminate the diaphragm completely and use only a foil driver. So I had a pretty good feel for what could be done by eliminating the diaphragm and the material that bonds the conductor to the diaphragm.

Ribbon drivers available in the '70s had some significant advantages on the top end, but also terrific limitations. Finally, the idea of a line-source ribbon struck me. It was almost a light-bulb idea again, and the rest just fell into line. All ribbons then had to use transformers because of their very low resistance. But by making the ribbon long, narrow, and thin—a line source—it now has enough resistance to drive directly.

No one had ever made a dipole ribbon before. Even small ones had a big horseshoe magnet—or something like that—that would absorb the back wave. For the return path, I used an armature pole piece rather than a big horseshoe magnet, and I slotted it so it was acoustically transparent. This made it generically similar to the pla-

nar-magnetic driver. I think mixing driver operating principles can be a real problem.

So the line source gave us direct drive, the slotting of the armature gave us dipole operation. Because it was so narrow and so thin, it had excellent horizontal dispersion. At 20,000 cycles, it has virtually 180-degree dispersion front and back, which makes it a true line source.

GB: *So you were able to retain a lot of the seamless characteristics?*

JW: Yes. And we're using it lower and lower in frequency. We're working on a really high-end model that will utilize that ribbon well down into the hundreds of cycles—hopefully down to around 200 to 300 Hz—by using multiple side-by-side ribbons. It's part of my basic patent on ribbon technology: It'll be a ribbon, a row of magnets, a ribbon, and a row of magnets. We just keep stacking them up. We'll show a prototype later this year; the speaker will cost somewhere in the \$5,000 to \$10,000 range.

GB: *How have the ribbons performed in the field so far?*

JW: They started out as we expected—more failures than we wanted. Ribbons are more fragile than flat-diaphragm or cone speakers. That's why we made it very easy to change the ribbon driver.

The ribbon is an ideal heat dissipater. It's almost impossible to overdrive. When there's a problem, it's most often mechanical, usually associated with shipping. We've developed new packaging techniques, and now we rarely get any back. The failure rate four years ago was around 5 percent, much higher than we liked. Today, it's a fraction of that.

GB: *What's behind your fondness for dipole speakers?*


JW: The first time I ever heard the KLH Model 9s, I felt the sound was far superior to that of the box speakers I had heard previously. It was that simple.

The major advantage of the [flat-diaphragm] dipole is that you have complete diaphragm control. In a cone speaker, you're pushing at just the apex of the cone and hoping the rest of the cone moves in unison. Also, the energy within the box has to



A RENAISSANCE IN SOUND

Sound has been vital on Earth since our planet acquired its atmosphere and produced the first vibrations that reached a receiving ear. Somewhere, sometime, way back then sound was born. What was that first sound? If only we could have been there to record its birth millions of years ago!



Think of all those glorious sounds gone unrecorded. The roar of Tyrannosaurus. The clashing of endless armies over the centuries. Cries and laughter and all the music and singing over the ages. Gone forever!

Not entirely. All these sounds and sights have been recreated in endless films, video cassettes and laser disks. Even the future exists in sight and sound, in science fiction adventures such as the Star Wars Trilogy. But...until now, sound reproduction in your home was more like a painting. Regardless of its beauty, it was two-dimensional. It lacked the visceral feeling of multi-dimensional reality and controllable power.

As man and his arts enjoyed a Renaissance in the 14th Century, so does man and his sounds, and sights, enjoy one in this decade. NEC offers you a true Renaissance in total sensory experience through our Renaissance Series of integrated system components.

You will hear sound reproduction in your home as you could never possibly experience it prior to this significant advance.

You will be surrounded by sound as you have experienced it in a theater, where Dolby® Surround Sound has become the industry standard. Through its commitment to leading edge technology, NEC brings this advanced and technically sophisticated system to the comfort and convenience of your home. Stereo Hi-Fi video cassettes and laser disks are encoded with the Dolby multi-channel sound information you cannot experience without this system. In fact, the Renaissance Series enables you to enjoy true Dolby Surround Sound from any stereo television broadcast encoded with Dolby Surround Sound.

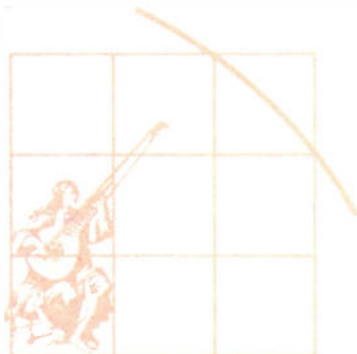
With the Renaissance Series, video will take on a new life and sensory power through this system which allows you total mastery of sound emanating from all directions. The NEC Renaissance Series is so sophisticated it will simulate the multi-dimensional effect even from non-Dolby sources. The NEC System is designed for the discerning and demanding listener.

The system also accommodates your own creative preferences. You can create your own state-of-the-art multi-dimensional matrix of sound. In effect, you can engineer sound to take maximum advantage of the acoustic qualities of your home "Media Room." You simply cannot duplicate NEC Renaissance sound quality and characteristics by adding speakers to a traditional sound system.

NEC Renaissance Sound can re-create every subtle nuance of a dramatic live experience and combined with video, create the total sensory effect as vivid as being in a million dollar theater. In this case, hearing is believing.

NEC's circuitry and architecture in the Renaissance Series demonstrates its dedication to producing superior products for the most demanding and knowledgeable users.

Listen!



As we move towards the 21st Century, the integration of Computers and Communications (C&C) will increasingly enhance the quality of life, increase productivity and nurture creativity through the human touch, as people are freed from the tedium of mundane tasks. NEC is dedicated to the future of C&C and digital technology...

NEC has its heritage in communications since our founding in 1899 as a manufacturer of telephone sets and switching equipment. We have grown and expanded for almost a century, always on the leading edge of the most advanced technologies. Thus, we have a comprehensive perception of the potential of the entire spectrum of computing and communications devices.

Our experience and long-term commitment to C&C and digital technology has resulted in the development of what we believe to be the finest audio system components available. We have skillfully integrated the best of computer and communications technology, employing digitalization, to create our new Renaissance Series of Integrated System Components.

The Renaissance Series is a marvel of "multi-dimensional" sound reproduction. It establishes a new level of sensory experience that you could never before enjoy in your own home. Keep your eyes and ears on us in the future for additional innovative and outstanding developments in the field of audio components.



M-50
MONAURAL AMPLIFIER

The M-50 amplifier features three selectable inputs. It can be used directly with a compact disk player, a preamp and directly with another audio component such as an AM/FM tuner. Its high current drive capability ranges from 50 to 240 Watts. Five selectable crossover frequencies for both high and low cut filters provide a 6dB octave slope for use with Bi-amp and Tri-amp systems. A direct-coupled DC servo features a low-noise FET input.



AVD-700
AUDIO/VIDEO SWITCHER/SURROUND
SOUND DECODER

This component offers the user great flexibility in the selection and creation of sound modes. It accommodates Dolby, Hall, Matrix and Creation with a Surround Sound memory control. A variable 16-bit digital delay circuit functions from 1 to 92 msec in 1.0 msec increments. Its left and right channels are provided with independent digital delay adjustments. For great flexibility in operation, it offers a wide array of audio and video in/output terminals.



PLA-610
A/V SURROUND SOUND PRO-LOGIC AMPLIFIER

This very sophisticated amplifier works with all four surround sound effects: Dolby Pro-Logic, Hall, Matrix and Concert. It has a combination of 10 input/output terminals ranging from audio/video inputs/outputs to center channel and monaural (subwoofer) outputs. Its many sophisticated features include a variable 16-bit digital delay circuit. The power amplifier is rated at 30 watts x 2 (8 ohms). It stores three memory presets for Surround Sound, volume level and delay time.

Renaissance Series

AVX-910 COMPREHENSIVE AUDIO/ VIDEO SWITCHER

No. of Terminals	Inputs	Outputs
Audio/Video	5*	3*
Audio-Only	5	1
A/V Monitor Output	—	1**
A/V Record Output	—	1**
Audio Level/Impedance		
Maximum Input	10Vrms/47k ohms	
Maximum Output	10Vrms/1k ohms	
Video Level/Impedance		
Inputs/Outputs	1Vp-p/75 ohms	
S-Inputs/Outputs	1Vp-p/75 ohms (luminance) 0.28Vp-p/75 ohms (chroma)	
Frequency Response	5Hz-100Hz ± 0 , -3dB	
Power Source	120VAC, 60Hz	
Dimensions (W x H x D)	43.0 x 8.0 x 34.0 cm 16-15/16 x 3-5/32 x 13-3/8 inches	
Weight	7.2kg (15-7/8 lbs.)	

*For each of 2 video inputs and outputs, there is also a S-terminal.

**In addition, 1 S-terminal.

PLD-910 DOLBY PRO-LOGIC SURROUND SOUND DECODER

Signal-to-Noise Ratio	90dB (Out 2/Dolby) 100dB (Out 1/Stereo)
Total Harmonic Distortion	0.005% (Out 1/Stereo)
In/Output Level/Impedance	
Input	150mV/47k ohms
Out 1	1V/1k ohms
Out 2 (A.B)	1V/1k ohms
Center	1V/1k ohms
Mono	1V/1k ohms
Surround Decoder	Dolby Pro-Logic surround/ 'Creation' surround
Digital Delay Circuit	
No. of Channels	2 (left/right independent)
Quantization	16 bits linear
Sampling Frequency	44.1kHz
Frequency Response	10Hz-20kHz ± 1 dB
Dynamic Range	90dB (Out 2) 'Creation' surround delay on)
Delay Time	
	1-94msec. (0.1msec. steps)
	15-30msec. (Dolby Surround)
Power Source	120VAC, 60Hz
Dimensions (W x H x D)	43.0 x 8.0 x 34.0 cm 16-15/16 x 3-5/32 x 13-3/8 inches
Weight	7.9kg (17-13/32 lbs.)

AVD-700 AUDIO/VIDEO SWITCHER/ SURROUND SOUND DECODER

No. of Terminals	Inputs	Outputs
Audio/Video	5	3
Audio-Only	5	1
Mono-Output	—	2
DECODER SECTION		
ANALOG STAGE (By-Pass mode)		
Signal-to-Noise Ratio	100dB	
Total Harmonic Distortion	0.005%	
Frequency Response	10Hz-100kHz (+0, -3dB)	
DIGITAL STAGE		
Dynamic Range	90dB	
Total Harmonic Distortion	0.02%	
Frequency Response	10Hz-20kHz (+0.5, -1dB)	
Delay Time	1mSec-92mSec (1mSec Step)	
GENERAL		
Power Requirement	120V AC, 60Hz	
Power Consumption	33W	
Dimensions (W x H x D)	43.0 x 8.0 x 34.0 mm 16-15/16 x 3-5/32 x 13-25/64 inches	
Weight	7.3kg (16.1 lbs.)	
Accessories	Instruction Booklet Wireless Remote Control Unit	

PLA-610 A/V SURROUND SOUND PRO-LOGIC AMPLIFIER

AMPLIFIER SECTION		
Rated Output	30W + 30W	
Total Harmonic Distortion Rate	0.03%	
Frequency Responses (by-pass mode)		
	10Hz-40KHz (-2dB)	
SN Ratio (Main in)	100dB	
No. of Terminals	Inputs	Outputs
Audio/Video	4	2
Audio-Only	2	1
Center Channel	—	1
Mono (Subwoofer)	—	1
Delay Time	15, 20, 25, 30mSEC	
Dimensions (W x H x D)	16-15/16 x 3-5/32 x 13-3/8 inches	

M-50 MONAURAL AMPLIFIER

Rated Output Power	50W (8 ohms) 100W (4 ohms)
Dynamic Power	240W (2 ohms), (Direct Input)
Frequency Response	5Hz-300kHz
Total Harmonic Distortion (at Rated Output Power)	
	0.004% at 8 ohms (20Hz-20kHz)
	0.006% at 4 ohms (20Hz-20kHz)
Signal-to-Noise Ratio 115dB or more (Direct Input)	
Input Sensitivity/Impedance	
"Filtered 0.15"	150mV/47k ohms
"Filtered 1.0"	1.0V/47k ohms
"Direct"	1.0V/20k ohms
High Filter	150/500/7k/15k/30kHz (-3dB with 6dB/oct.)
Low Filter	18/35/70/150/500Hz (-3dB with 6dB/oct.)
Power Requirement	120VAC, 60Hz
Power Consumption	120W
Dimensions (W x H x D)	8-17/64 or 8-9/32 x 4-23/32 x 14-31/32 inches (210 x 120 x 380 mm)
Weight	8.2kg (18 lbs.)

NOTE: Design and specifications are subject to change without notice.



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1255 Michael Drive, Wood Dale, Illinois 60191-1094 Telephone (312) 860-9500

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AVX-910

COMPREHENSIVE AUDIO/VIDEO SWITCHER

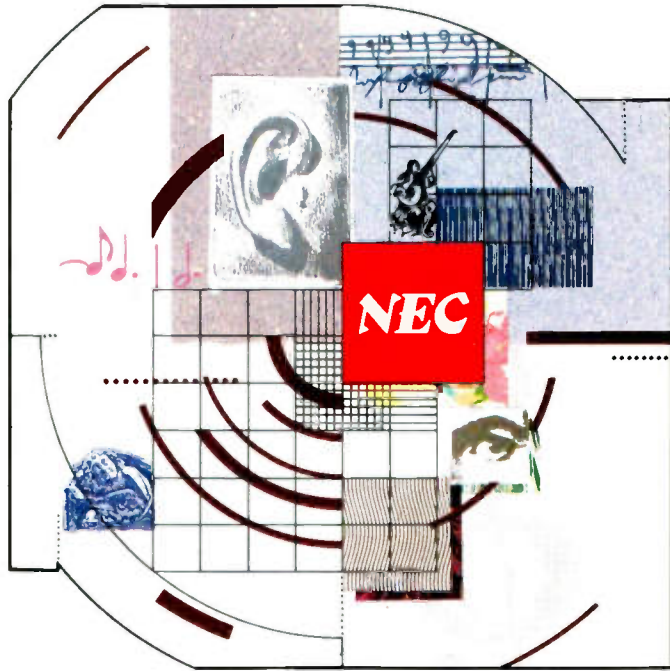
Provides great system flexibility by allowing switching capability between a large number of audio and video inputs and outputs. It also provides output monitoring and record modes for both audio and video. Its advanced circuitry features Digital Video Noise Reduction. To ensure absolute signal integrity, the AVX-910 is built with independent circuits for both audio and video signals plus an independent power supply for each of these signals. In addition, it provides you with S/VHS inputs/outputs.



PLD-910

DOLBY PRO-LOGIC SURROUND SOUND DECODER

The PLD-910, digitally, provides logic steering of all the audio signals. Its capabilities include Dolby Pro-Logic Surround and Creation Surround. A L/R independent dual variable 16-bit digital delay circuit ranges from 1 to 94 msec in 0.1 msec steps. Independent power supplies and independent circuit boards are employed for both digital and analog circuits assuring you of signal integrity.



*A Renaissance
in Sound*

be absorbed. It's inevitable that there will be resonances within the cavities that will have an effect on the cone.

A box speaker generally has to absorb the back wave, so you're getting mostly direct sound plus what's reflected by the room. A dipole is far more similar to an actual performance. The sound from an instrument goes in all directions. What is eventually picked up with a microphone—and recorded and then reproduced—is a combination of direct and reflected waves.

GB: *If that ambience is part of the recording, then surely it's reproduced by box speakers.*

JW: That argument makes a lot of assumptions about the original recording environment. The ambience in any recording situation is very damped. If you had a very reflective studio and you were picking up a proper proportion of direct vs. reflected sound and reproducing it, I suppose that argument would hold.

GB: *So what you're saying is that a dipole speaker can replace a lot of the ambience lost in most commercial recordings.*

JW: I think that's a fairly accurate way of expressing it.

GB: *In your literature, you state that one of the advantages of your speakers is their ability to reproduce image height as well as width and depth. How is that possible?*

JW: I think you could put together some plausible explanations for this. Certainly, it's pretty well observed that a tall speaker like ours does reproduce height. I wouldn't want to try to provide an explanation as to why some instruments seem to come from a higher location than others. It's really very tough to follow that through the phase relationships of different microphones, especially with multimiked recordings.

The fact is that there is a diaphragm up there, vibrating and creating sound waves. How much of it is an actual physical phenomenon and how much is an illusion is hard to say. I would be the last to say that part of it isn't an illusion.

GB: *Designing dipole speakers must present some challenges of its own. How do you deal with back-to-*

front cancellation, for example?

JW: About the only thing you can do is make your baffle so large that the front-to-back wave distance is great enough to minimize cancellation. We design our speakers as freestanding transducers, and we factor in cancellation. In effect, we build in equalization—physically, not electronically.

GB: *Can you describe how you use*



Magneplanar MG-IIIa loudspeaker

subjective and objective performance criteria during the design process?

JW: I still do 98 percent of the r&d work myself. I use normal tools—a spectrum analyzer is like a third hand to me. I would say the process is 50 percent measurement and 50 percent subjective. I spend an incredible amount of time on crossover design—making the transition between drivers seamless, matching their transient capabilities. It's a constant listening thing.

I've measured speakers that are unbelievably flat yet don't sound good. You have to be very careful. I used to design for a flat response, but we happen to think that dipoles don't want to be flat. There should be something in the neighborhood of a 1-dB-per-octave rolloff from bottom to top.

GB: *How do you deal with the sensitivity of dipole radiators to listening room characteristics and speaker placement?*

JW: The room is such an unknown. We have two soundrooms, one of which I call a poor-man's anechoic chamber. I do very little work in there. I do most of my work in a "normal" listening room.

GB: *Does room sensitivity limit the number of people for whom your speaker is an appropriate choice—people who are willing to tinker with it to find the right placement?*

JW: I used to think it did. In the early days, when our bass was kind of marginal, it took some real work to get the speaker to couple to the room properly. Since then, we've made dramatic improvements, to the point where I can almost tell anyone where to put the speakers and know they're going to get reasonably good bass.

GB: *Is the mindset you bring to the design of a low-price or midbudget product significantly different than that of an upmarket product?*

JW: Oh, very, very different. In the middle and lower ranges, you're constantly considering the cost of materials and manufacturing, the cost vs. performance ratio. At the top end, you almost forget about cost. That's against my natural inclination, but it gives us more freedom.

It also sometimes leads to gold-plating, which I'm very much against. By gold-plating, I mean an inclination for products to include things that really don't contribute. I've never really done a gold-plated product, and I never will. In the long run, I think we're a very healthy company because we make sure people get good value for what they pay—and not unnecessary things. □

Gordon Brockhouse has been an editor of Canadian audio and computer industry trade publications.

Denon's New Integrateds

Each of Denon's four new integrated amplifiers features Optical Class A circuitry, a high-current power supply in a floating-ground configuration, and discrete output transistors. Optical Class A denotes the use of a high-speed bias-control circuit that varies bias according to signal conditions. Denon says the use of optical isolators between the bias circuit and the output stage prevents a loudspeaker's back-EMF (electromotive force, or voltage) from degrading amplifier performance.

Other features common to all of the new amps include electronic source switching; a CD Direct mode for bypassing the balance and tone controls; moving- and fixed-coil phono inputs; a 12-dB-per-octave infrasonic filter at 16 Hz; and heavy-duty three-way binding posts for the speaker outputs. The PMA-520, PMA-720, and PMA-920 have the following per-channel power ratings into an 8-ohm load: 70, 90, and 115 watts (or 18.5, 19.5, and 20.6 dBW).



Denon's PMA-1520 integrated amp decodes digital source signals.

Prices are \$350, \$450, and \$600, respectively.

The top-of-the-line PMA-1520 (\$1,000), rated at 130 watts (21.1 dBW) per channel, differs from its siblings in that it contains a four-times-over-sampling 16-bit digital-to-analog converter (DAC). The decoder in the 1520 consists of four DACs (two per channel) in a push-pull configuration (an arrangement also used in Denon's DAP-5500 digital-input preamplifier). One pair of DACs processes the direct digital signal, while the other gets an inverted-phase version; in this manner, the company says, distortions tend to be cancelled, improving

dynamic range. In addition, the 1520 incorporates the Super Linear Converter circuit, which enables Denon to minimize distortion at very low signal levels.

Digital inputs and outputs can be made by means of either a coaxial cable or an optical fiber cable (if the source unit is so equipped). The appropriate sampling rate for incoming digital signals is automatically selected—32 kHz for digital audio from broadcast satellites (DBS, as yet unavailable in the U.S.), 44.1 kHz for CD signals, or 48 kHz for DAT signals. Contact Denon America, 222 New Rd., Parsippany, N.J. 07054.

Good Combination

The NAD 1700 (\$798) is a rare but highly practical combination of two components—a preamplifier and a tuner—and comes with a comprehensive remote control. The preamp section includes phono inputs for fixed- and moving-coil cartridges, two sets of tape inputs, and connections for a CD player and audio from a video source. A switch enables you to invert the polarity of a source signal. Semiparametric bass and treble controls (their bandwidth is fixed at 1½ octaves) enable finer adjustments to frequency response than conventional wideband controls. The three center frequencies for the bass control are 50, 120, and 250 Hz; those for the treble are 3, 6, and 12 kHz. In addition, Bass EQ adds guts to the bottom end with a 6-dB boost at 32 Hz and a 3-

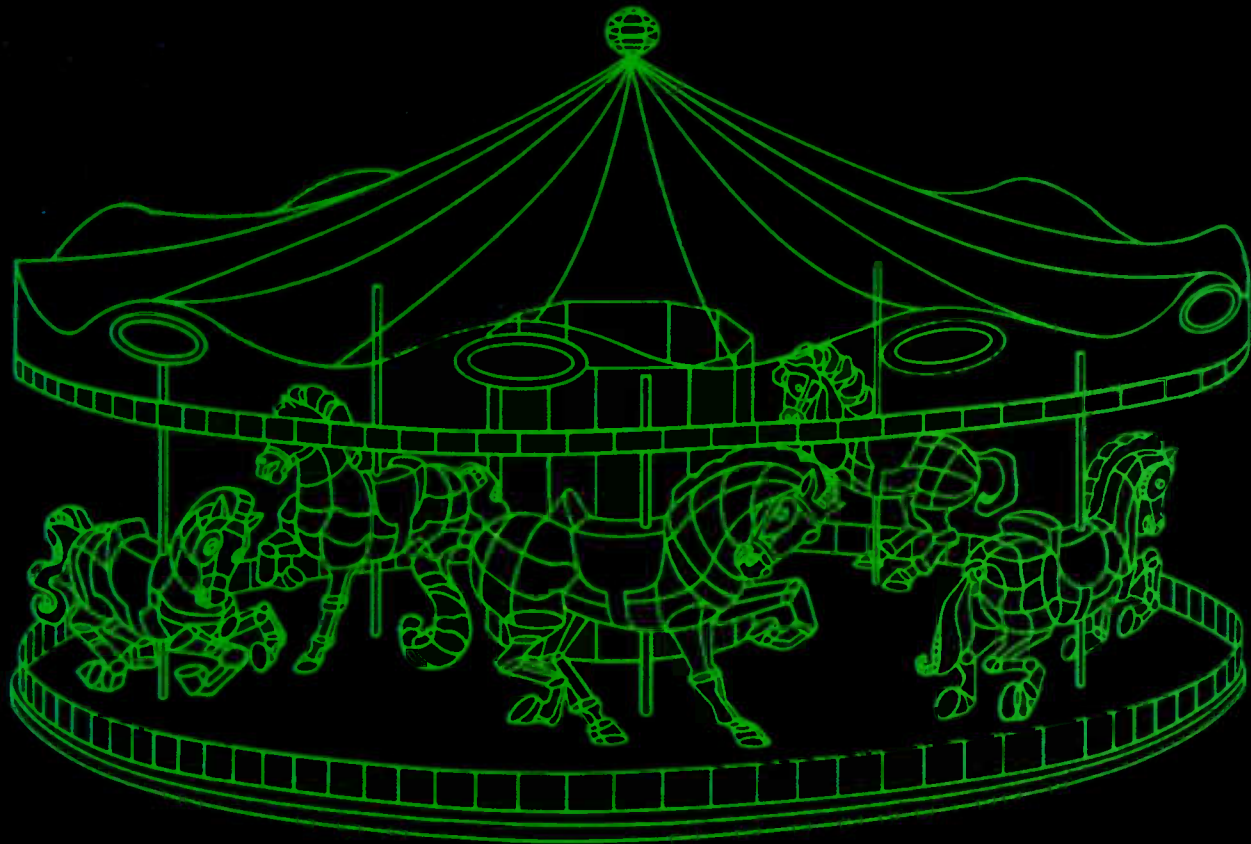
dB boost at 70 Hz (a sharp infrasonic filter kicks in below the audible range). To eliminate the noise that can plague electronic volume controls, the 1700's volume knob is motor-driven in response to remote commands.

As in NAD's 7600 receiver and 4300 component tuner, the 1700's digital frequency-synthesis tuner is stepped through its frequencies by means of a conventional rotary knob (there are station presets as well).

The tuner features NAD's impressive FM Noise Reduction, which reduces noise on weak stereo FM stations at minimal expense to channel separation (the classic trade-off).

NAD touts the remote's design as "ergonomically derived," placing all buttons within reach of your right thumb during hand-held operation and firing its infrared beam from both ends. For more information, contact NAD U.S.A., 575 University Ave., Norwood, Mass. 02062. □

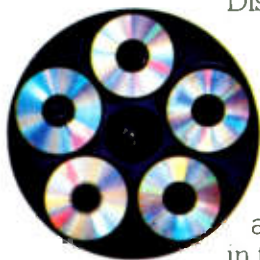




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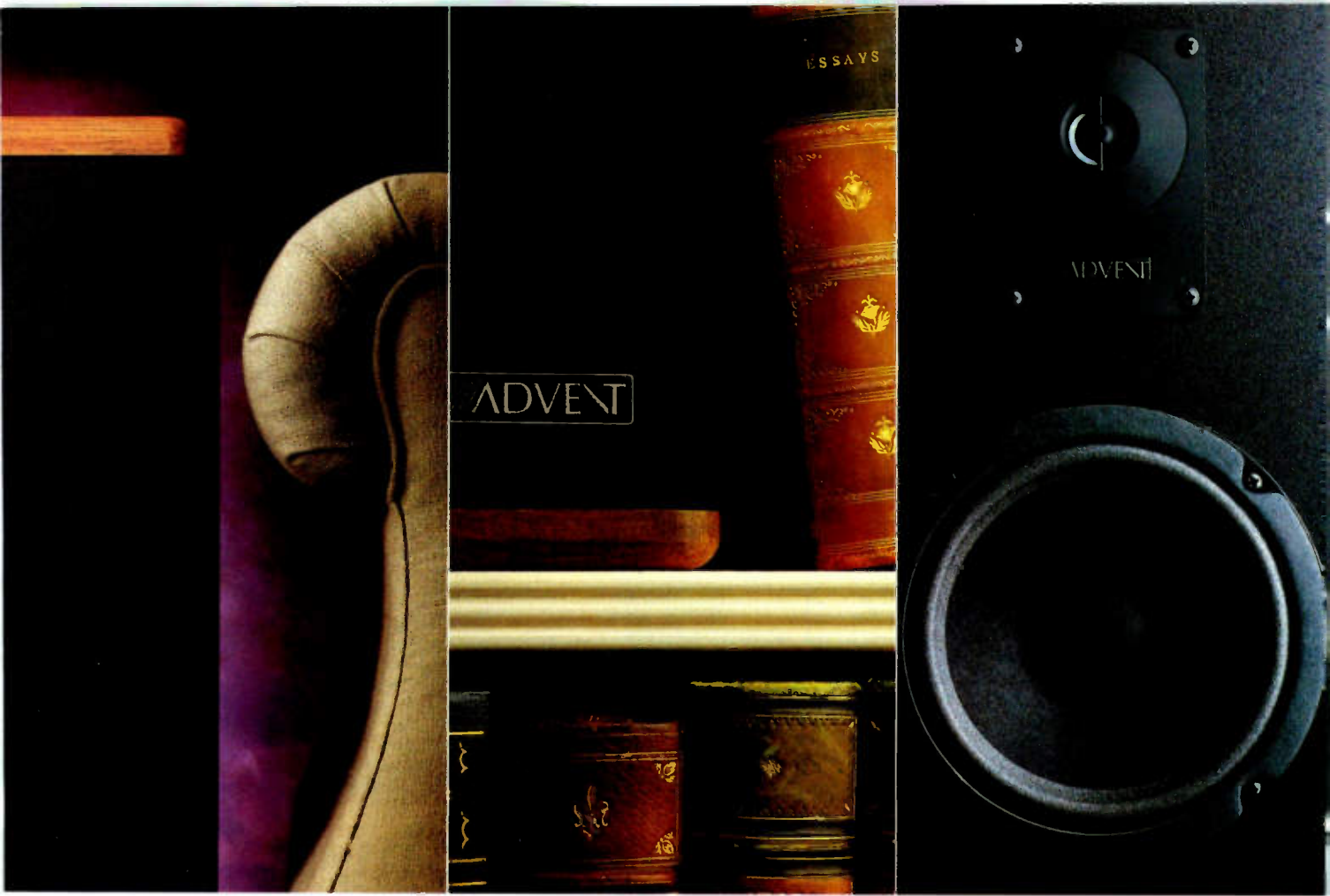
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LOUDSPEAKER

**DESIGN
TRENDS**
BY E. BRAD MEYER

Theoretically at least, loudspeakers are the easiest audio components to write about. There are instantly audible differences between any two models, an infinite variety of sizes and types, and—as shown once again at last January's Consumer Electronics Show (CES) in Las Vegas—a constant outpouring of new designs.

But the large differences among speakers also makes them hard to categorize. Their designers have to meet many often conflicting goals: midrange clarity, solidity and precision of the stereo image, width and depth of image, bass and treble extension, absence of distortion and coloration, sensitivity, size and weight, appearance, and, last but not least, the cost of parts and assembly. Every model from every manufacturer is the result of a complex balancing act among these and other parameters. With so much leeway available to a designer—and to the consumer—how can anyone lessen the apparent complexity of the loudspeaker market? The easiest way is to look only at the unusual aspects of a particular design.

EAST MEETS WEST

One grand simplification can be applied to loudspeakers but not to other audio components: Most of the good ones come from North America or Great Britain. Westerners dismayed at the apparently inexorable Far Eastern takeover of the audio business have always taken secret comfort in the seeming inability of the Japanese to master the art of speaker design (as opposed to speaker construction, at

which they are past masters).

The reasons for this may rest with corporate culture. On a press trip to the headquarters of a large Japanese electronics company, I saw a speaker-design division equipped with an anechoic chamber that would be the envy of any university physics department; outside it was a minicomputer with a graphics-input tablet. The designer could specify the physical characteristics, measured frequency response, and cabinet position of each of a set of drivers, then simply draw the desired frequency response of the complete loudspeaker system on the tablet. The computer would then design a crossover network to produce the desired result.

Unfortunately, the speakers that emerged from this wonderful facility have usually been disappointing. Why? To begin with, it does little good to optimize a speaker system for a single listening angle with no regard for overall power response or off-axis smoothness. But the crucial missing element seemed to be that no one person ever fine-tuned the speakers' sound; they were, in effect, designed by committee, and they sounded like it. A great speaker is designed not by consensus, but by a golden-eared genius.

At CES, it was evident that at least one big Japanese company has gotten the idea. In an unusual move, one man alone was given the final responsibility for designing the Sansui SP-100i Vintage loudspeaker, a compact two-way vented unit with an 8 $\frac{1}{2}$ -inch woofer. The company was happy enough with the result to demonstrate it in a room in the Riviera Hotel, which each

year houses the high-end audio exhibits. On the usual variety of music I use to test speakers, the SP-100i sounded smooth, uncolored, and musical, with excellent imaging and good bass down to its limit of around 50 Hz.

Like many speakers from the large, vertically integrated Far East companies, the SP-100i sports high-tech materials and complex construction. The woofer cone is a triple-layer damped sandwich with a surface made of carbon-fiber material, and the tweeter is a titanium dome coated with diamond dust! Most interesting, however, is the cabinet, which is designed for minimal panel radiation and diffraction. In most systems, the drivers are simply bolted to the front panel. In the SP-100i, however, they are mounted from the back—the woofer to a large internal brace, the tweeter to a metal bracket screwed to the top of the cabinet. As with many recent small speakers, the SP-100i's external magnetic field is controlled so that you can use it next to a TV set. Such high technology doesn't come cheap; the SP-100i will list for \$1,600 (all prices are per pair).

Nevertheless, the Sansui is far from being the most expensive small two-way

**THINGS GET
CURIOUSER
AND
CURIOUSER**

LOUDSPEAKER

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system. The continuing success of the high-end video surround-sound market—where small size is a big advantage for front, side, and back speakers—encourages designers to use expensive technology. The SL-700, Celestion's top-line two-way, is, like its predecessor (the SL-600), a two-way design with an 8-inch woofer and a cabinet made of an aluminum honeycomb-sandwich material called Aerolam. The crossover network has been improved, and special stands come with the system, which sells for \$2,800.

*Altec Lansing Model 550
powered speakers: \$12,000,
1,400 watts per pair*



At the top of the price chart of compact systems is the Wilson Audio Tiny Tot (WATT). The WATT's designer has aimed for the complete suppression of cabinet vibration with a brute-force approach involving massive bracing, thick cabinet walls, and 1/2-inch sheets of lead, bringing the weight of each cabinet to 60 pounds. Equipped with a 6 1/2-inch woofer and a 1-inch inverted dome tweeter, the WATT sells for \$5,200 (stands are \$750 extra).

These pricey models weren't the only small two-way systems introduced at CES. The first products of a new company, NHT (for Now Hear This), join the distinguished family tree of speakers from East Coast companies—a dynasty that began with Acoustic Research (AR) and was followed by KLH, Advent, EPI, Genesis, Snell Acoustics, Allison Acoustics, and Boston Acoustics. The living link, in this case, is Ken Kantor, a former AR engineer who has designed two new loudspeakers for NHT, both of which have unusual-looking front panels angled inward for optimum stereo imaging. The two-way Model I (\$300) is a compact low-external-field design with a 6 1/2-inch woofer and a 1/4-inch tweeter; the tall and narrow Model II (\$700) adds a second woofer—mounted near the bottom of the cabinet—that crosses over to the upper driver at 100 Hz.

OFF THE WALL

One clear but somewhat surprising trend evident at CES was the proliferation of wall-mounted speaker systems. If your first reaction to the concept is to think of squawky, intrusive PA systems, you have a surprise coming. The space behind a wall board and between the studs is quite generous, in effect supplying a large enclosure volume that provides for extended bass response with reasonable efficiency using small-diameter low-frequency drivers. (This is one reason why venting the backs of woofers into a car's trunk can yield such good bass.) And, of course, drivers mounted flush with the wall have no enclosure edges near them and are therefore free of diffraction effects.

The only reason wall-mounted speakers have been so bad is that no one bothered to design the high-quality drivers and crossover networks necessary for smooth response and good imaging. Among the earliest serious wall-mounted speakers to



*Sansui: Diamond
dust is forever.*

do this were modified car-stereo units from ADS and Boston Acoustics. Now Sonance, Polk Audio, and the British firm KEF have all come out with high-quality two-way systems complete with well-thought-out hardware for mounting in either new or existing walls. Most models come with either metal grilles (which can be painted to match a solid wall color) or cloth-covered grilles (which can use the fabric cut from the wall, if applicable).

The KEF Custom Series is based around the CR-200F two-way full-range system, with an 8-inch woofer and a 1-inch tweeter. For added bass reach and volume, you can add one or more CR-250SW woofers, which each contain a single 10-inch driver. Listening tests with music and test CDs indicate that the full four-unit system has smooth overall response, good stereo imaging, and reasonably powerful bass extending down to around 32 Hz. Considering how inconspicuous the system was, all of this was quite astounding.

Of similar capabilities is the Sonance Powered Subwoofer/VCA Amplifier system, which consists of a pair of two-way satellite systems (the company offers three choices) and a three-channel amplifier with a DC-operated remote volume control. An internal electronic crossover can be set to match any of the company's three satellites, and a separate bass-level knob enables fine-tuning of the system's woofer balance.

Most of these systems are designed for sale to installers, not users, so only wholesale prices are available. Given a reasonable installer's markup, you should be able to get a pair of two-way Polk Audio AB-7s for around \$400 installed, while a KEF system with two satellites and two woofers—or the Sonance system with two sat-

ellites and one powered woofer—should cost less than \$1,000.

STRANGE DAYS

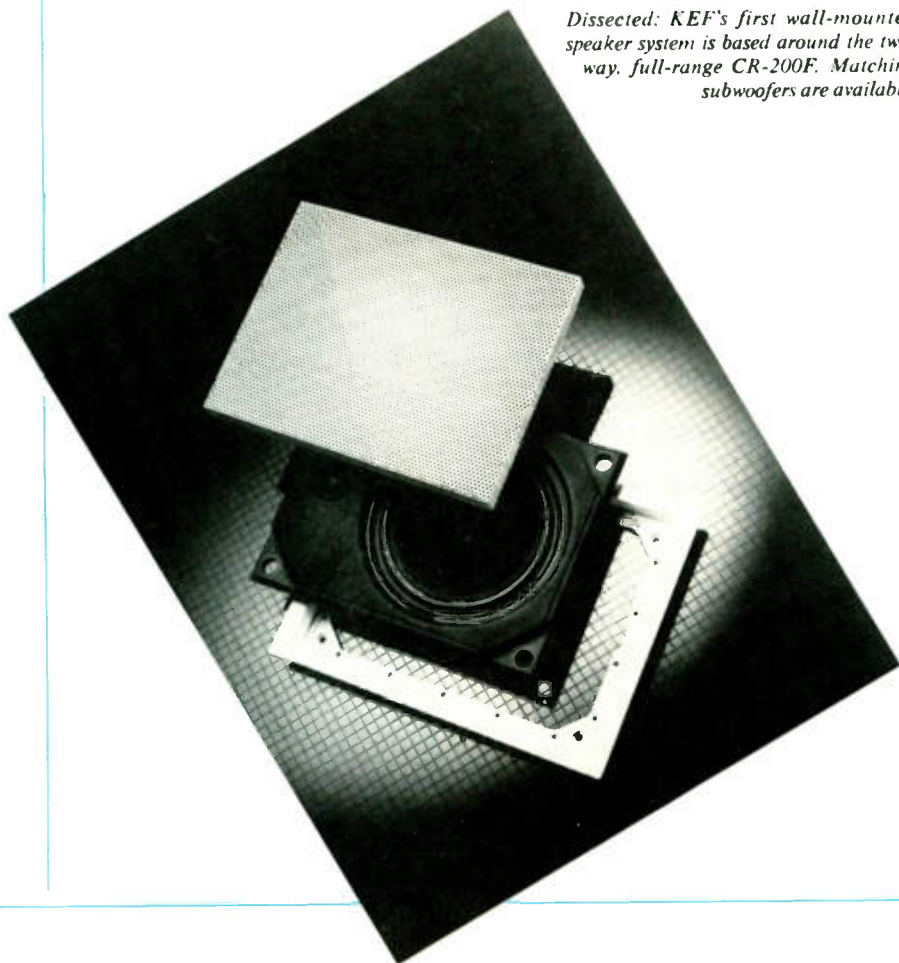
There are weird-looking speakers at every CES. Some resemble flying saucers, some are disguised as bad oil paintings, and most of them sound as odd as they look. They usually come out of nowhere, give everybody a good laugh for a single show, and are never seen again. At this January's CES, for instance, a company called Nesher Industries showed an octagonal end table topped with two layers of wood. When you grab the upper layer and twist, an inner section mounted on a spring-loaded hydraulically damped lifting mechanism whooshes upward to reveal a modest—and modest-sounding—three-way speaker system. This "Pocket Speaker" costs \$800; an electrically operated model is said to be coming soon.

Two strange-looking systems surprised

me by sounding remarkably good. One was the ZSE (for "Zero Stored Energy") Model 380, a product of the Illinois-based Mitek Group (which also makes the American Acoustics brand of loudspeakers). The 380 consists of two flat panels, one above the other, that are mounted on a slim framework. One is a dipole (with an open back), and the other isn't. Interestingly, the dipole isn't the tweeter panel; it's the woofer. A separate line-level equalizer compensates for the bass rolloff common to low-frequency dipoles. The sound is warm, with very little coloration, and the stereo image is both well focused and much larger than the size of these \$1,800 speakers would suggest. The system requires a subwoofer, though, if you need loud, low bass.

Over the last several years of Consumer Electronics Shows, the German firm Magnat has shown a number of speaker systems with small cabinets designed to

Dissected: KEF's first wall-mounted speaker system is based around the two-way, full-range CR-200F. Matching subwoofers are available.



*Now Hear This:
NHT Model I*

minimize diffraction. The most extreme example of this design is the Magnasphere Nova. The speaker looks like someone set a stick upright and then impaled on it first a volleyball, then a softball, then a tennis ball. Each round subenclosure houses a pair of dome drivers mounted back to back, designed to mimic as closely as possible the fabled pulsating sphere. A separate woofer module contains two pairs of 7½-inch drivers mounted face-to-face, operating in a push-pull fashion, and two 180-watt amplifiers.

Of the company's many attempts, this is the first Magnat system I have heard that actually delivers the clean sound and spacious but precise stereo image its looks seem to suggest. Price for the system, including an electronic crossover with variable delay to allow for different placements of the woofer module, is expected to be about \$6,000.

Other, more normal-looking speakers at CES had unusual construction or behavior. Like the Sansui mentioned earlier, Mordaunt-Short's System 442 has drivers mounted to a large internal structural member, in this case a central steel piece that serves as the vertical strut for the floor stand. The drivers are thus clamped to the floor while the cabinet shell is isolated from them through resilient mounts. An auxiliary bass driver buried in the back of the cabinet is mechanically coupled to the front woofer to cancel its mechanical motion. The System 442 is equipped with a protection system the company calls Posi-

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tec: bistable, temperature-sensitive resistors placed in series with each driver that increase their resistance by a factor of 100 or more when the incoming signal reaches potentially destructive levels. (These are also used in the Allison Acoustics IC-20.)

For many years, fans of electrostatic speakers have been forced either to use cone subwoofers that never seemed to mate well with the rest of the system or to simply forego the ultimate in bass extension and output level. (Some defended the latter choice by insisting that the resulting rolled-off bottom end was actually more realistic, but usually managed to convince only themselves.) The problem is caused by cancellation of the front radiation by long-wavelength low frequencies from the back radiation; the frequency at which this starts to happen is inversely proportional to the size of the panel.



*Infinity SM-80
compact speaker*

At the CES, Sound Lab finessed the problem by assembling a pair of its curved A-1 panels next to the side walls of their hotel room and then completely filling the space between them with two giant electrostatic woofers. The resulting bass was very convincing, at least until I tried a Hindemith organ-music Compact Disc with a humongous 19-Hz note. This produced loud flapping sounds but left the panels undamaged. (It must be admitted, though, that the disc—Argo 417 159-2—is an unusually severe test.) The main A-1 panels are \$8,950, while two B-1 woofers cost \$10,500. Alternatively, \$5,500 will buy you a single B-1, which has two separate subpanels to take the bass from the two stereo channels. (These prices do not include the necessary electronic crossover.)

Acoustat's Spectra 22 (\$1,850) and 33 (\$2,250) use only narrow vertical electrostatic panels, the company seemingly having abandoned the separate cone woofers used in some of its earlier models. As in previous Spectra Series units, the high frequencies are rolled off and the output delayed to all but the next-to-inner panels, effectively curving the overall sound source for wider dispersion. A similar directivity-controlling scheme is used to control vertical radiation from JBL's Cascade System, which contains four titanium-dome midrange drivers with an unusually large 3-inch diameter. These are set in a vertical array and are driven in phase at low frequencies; in the upper part of the driver's range, the second driver

from the top gets most of the energy, while the others are progressively rolled off.

Lastly, the Snell Acoustics Ci/II (\$1,890) is more a new speaker than a redesign of Peter Snell's highly regarded Ci: It is a tall three-way model with a vertical cabinet front (as opposed to the slanted top of the Ci) and a larger internal volume, giving sensitivity greater than that of the older version by several decibels. The new speaker still has a back-firing tweeter. Despite the redesign, the Snell Ci/II does not employ ultrahigh technology or unconventional construction. But it does exemplify the notion that a great speaker must be created by a golden-eared designer—in this case, Kevin Voecks, who gave an extremely effective demonstration of the Ci/II in a completely darkened room. He did have high-tech help, however, since much of the fine-tuning of the Ci/II was performed in conjunction with the acoustical-measurement facilities of Canada's National Research Council in Ottawa. The quality of the Ci/II just shows what, given the proper tools, a talented designer can accomplish. □

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BLAZING TWEETERS

What loudspeaker power ratings really mean.

By Larry Klein

Do you have a sense of impending disaster—perhaps involving smoke and flame—because your expensive “50-watt” speakers are being driven by a 100-watt amplifier? Perhaps the salesman who sold you the system claimed there would be no problem, but mysteriously never explained why. Maybe you recently read that CD recordings of reed instruments such as clarinets and saxophones can produce enormous instantaneous signal peaks. Will those peaks drive your amplifier to speaker-killing levels? In short, given your setup, is it possible to have absolutely safe sax?

POWER “RATINGS”

Most loudspeaker spec sheets expound at length about computer-designed fourth-order Butterworth crossover networks with phase-compensated 24-dB-per-octave slopes, etc., etc. This sort of jargon may be meaningful to a speaker designer, but it certainly doesn't convey much to a typical speaker buyer. On the other hand, the speaker's power-handling capabilities, which are meaningful, usually get short shrift. You might see a cryptic notation like “Power rating: 10 watts minimum, 70 watts maximum.” To that bare-bones—and practically useless—spec, some manufacturers add “RMS” or “peak,” as if such terms clarified anything. Forgetting for a moment that it's practically impossible to buy a quality amplifier with a power rating as low as 10 watts, what does such a loudspeaker spec tell you? Not much—and here's why.

A speaker system's maximum-power rating necessarily involves three characteristics of the signal feeding the speaker: level (amplitude), frequency, and time. In other words, it isn't just the wattage of an impinging audio signal that determines whether it can damage a speaker system; it's also the frequency content of the signal and the amount of time the signal is applied. The reasons for this become clear if you examine the physical characteristics of the drivers in a typical loudspeaker system.

In order to “tweet” effectively at the upper end of the human hearing range, a high-frequency driver must have a small, low-mass radiating surface. The

smaller a tweeter's diaphragm, the wider its dispersion (usually, but not always, a desirable characteristic). And the lower a tweeter's mass, the greater its efficiency—it's easier to push around. Unfortunately, lightweight miniaturization of a tweeter makes it fragile and unable to absorb large amounts of possibly destructive heat. And where does that heat come from? It is the product of inefficiencies: More than 95 percent of the amplifier power fed into a speaker is converted not to sound but to heat in the crossover networks and the drivers' voice coils.

Fortunately for tweeter designers, music does not distribute its energy evenly throughout the audio frequency range. Music viewed on a ten-band real-time spectrum analyzer (of the type found in many high-end equalizers) shows that most musical energy is found in the middle frequencies. With the exception of relatively rare high-level transients, the energy that normally reaches the tweeter is both low in level and short in duration. You can confirm that by bringing your ear close to the high-frequency driver in a three-way system. If the crossover frequency from the midrange driver to the tweeter is high enough, you will hear very little sound coming from the tweeter, as compared to that from the midrange driver.

DAMAGING EVIDENCE

Because of the unequal power distribution to the drivers within a system, a tweeter designed to withstand only 4 watts of power *within its frequency range* would be considered a heavy-duty unit suitable for use in, say, a loudspeaker rated for 150 watts. However, if those 4 watts were exceeded on a *sustained* basis, tweeter damage or failure would likely occur.

Although comparatively little energy reaches the tweeter in the normal course of music reproduction, several circumstances can charbroil its voice coil. For example, the same combination analyzer/equalizer mentioned above can also blow your tweeters out if you use it to boost the upper octaves excessively on material that is already top-heavy. Pink noise from a CD test disc can also cause damage if used

BLAZING TWEETERS

carelessly, as I discovered once by blowing out a pair of very expensive beryllium-dome tweeters during testing. As I recall, the tweeters didn't seem to be putting out very much sound before they suddenly weren't putting out any.

Marginally unstable amplifiers can be a mysterious source of tweeter blowout. When connected to a difficult (highly reactive) speaker system and fed certain crucial signals, such killer amplifiers can oscillate ultrasonically or generate large high-frequency transients (Fig. 1). Either of these may be the last input to which your tweeters ever respond.

CLIPPED WINGS

Most audiophiles are by now aware that a low-power amplifier driven into severe signal clipping—in which the peaks of the amplified waveform are “clipped off” by voltage or current limitations in amp circuitry (Fig. 2)—can be more dangerous to the health of their speaker systems than a higher-power unit with enough headroom to avoid such behavior. Short periods of clipping may not be audible; longer overloads are frequently perceived as level compression rather than distortion. However, badly overdriven amps produce a raspy distortion not unlike that of a mistracking phono cartridge. Deep-bass passages are likely to take on a “mushy” quality.

An overdriven amplifier operating in “hard” clipping (Fig. 3) can produce far more high-frequency energy than is normally found even in loud program material. The high level of this spurious energy, combined with the high-frequency instability (output spikes or oscillation) that frequently accompanies hard clipping, is a common cause of tweeter failure. It is likely that more tweeters have been killed by overdriven 20-watt receivers

than by oversize power amplifiers.

In short, tweeters are seldom destroyed by playing music too loudly. Some untoward conditions, such as those mentioned above, usually have to be involved. Incidentally, overstressed tweeters don't go out with a bang; usually, they don't even whimper. They just quietly quit working. For that reason, days may go by before you notice the highs missing from a defunct tweeter in a three-way system.

Woofers and, to some degree, midrange drivers have an important advantage over tweeters: Their cone movements pump air around their voice coils and help carry off some of the heat buildup. With tweeters, the diaphragm movements are so small that there's no convection or forced-air movement to provide substantial cooling. Heat conduction doesn't help a tweeter, either, because only a pair of thin wires connects the voice coil to the rest of the structure. Essentially, the only way a tweeter voice coil can cool itself is by transferring heat to the surrounding metal structure—an inefficient process at best. That's why ferrofluid has proven to be so important in increasing speaker power-handling capacities.

The ferrofluid used in speakers is a stable, viscous fluid (originally developed as a lubricant for aircraft turbines) containing minute magnetite particles. In a loudspeaker driver, a small amount of ferrofluid is deposited in the gap between the magnetic structure and the voice coil. The fluid disperses evenly throughout the gap (where it is held in place by the magnetic field acting on the magnetite) and thereby provides an efficient heat-transfer medium between the voice coil and the surrounding metal. Although tweeters are the greatest beneficiaries of ferrofluid, the liquid is sometimes used in midrange drivers as well.

DANGER SIGNALS

In general, the harder any analog audio component (electronic or mechanical) is driven, the higher its distortion. You can think of speaker distortion as serving the same function as a pain in the body: It's a warning that something is amiss. But distortion usually does not become apparent until the component approaches its mechanical or electrical limits. Noticeable distortion is just your speaker's way of saying, “Turn it down.”

Drivers in a speaker system react differently to being pushed too hard. As mentioned, a tweeter usually gives up the ghost without warning. The *lower* the frequencies a midrange driver must handle, the greater the mechanical and thermal stress it undergoes. A midrange unit intended to perform down to 500 Hz or so must be ruggedly constructed because it is operating in typical woofer territory. An overstressed midrange will sound raspy or otherwise distorted. If it sounds the same way after the volume is reduced, it may have been pushed beyond recovery.

Woofers normally give you plenty of early warning when they are running into trouble, which usually results from mechanical (not thermal) limitations. The outer cone suspension (the surround), the inner cone suspension (the spider), and the cone itself are all at risk when a woofer is overdriven at low frequencies.

A slightly overdriven woofer will “double” or “triple”: In other words, as the cone and voice coil approach their mechanical

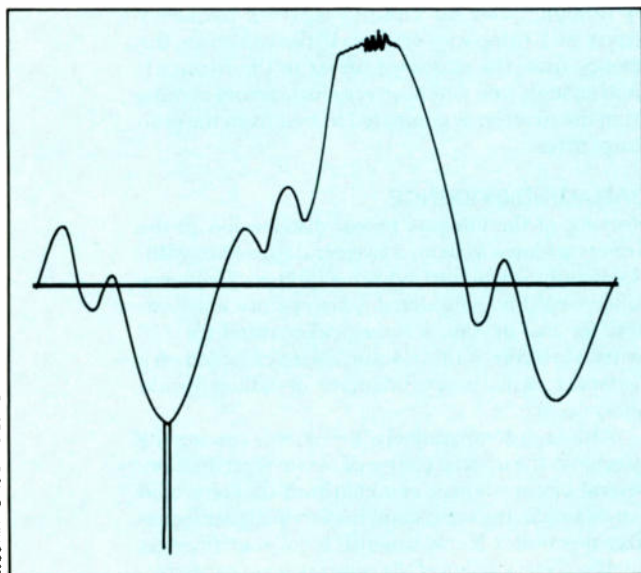


Fig. 1: When overloaded, an unstable amplifier can emit full-scale voltage spikes or bursts of high-frequency oscillation.

BLAZING TWEETERS

and magnetic limits, the cone motion no longer follows the electrical waveform fed to it. The result is second- and third-harmonic distortion. For example, a speaker overdriven by a 50-Hz tone will produce large amounts of spurious 100- and 150-Hz energy in addition to the original 50-Hz tone.

Other sonic artifacts can arise from nonuniform flexing of a woofer cone (also known as breakup), and rattling or snapping noises may be heard as the end of a voice coil strikes the back of the driver's magnetic structure (a phenomenon called "bottoming"). Even in a woofer, a long-term overload not quite large enough to cause mechanical problems can create enough heat to warp, throw off the windings, or char a voice coil. But in the past dozen years, advances in adhesives and voice-coil materials have eliminated many thermal problems, so mechanical stress remains the primary woofer killer. A whopping overdrive situation (such as plugging a speaker into a wall socket) can literally tear the woofer cone out of a speaker.

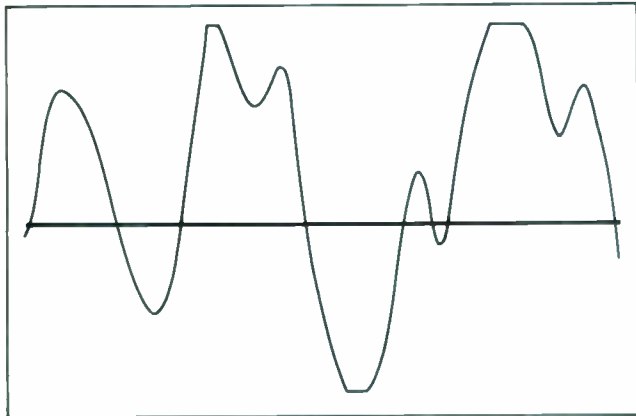


Fig. 2: When an amplifier reaches the limit of its output, the extremes of the signal are "clipped" off, flattening the waveform.

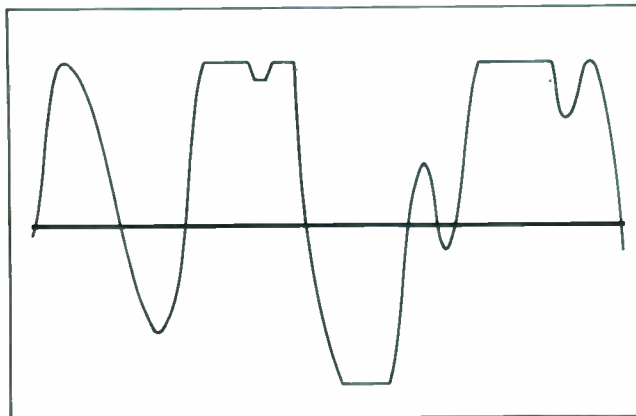


Fig. 3: Driven still harder, an overloaded amplifier goes into hard clipping, and its output becomes more squared off.

There is one little-recognized distortion that occurs when a speaker is run close to its limits. It occurs because the resistance of the wire used in a voice coil increases as its temperature rises. The effect is so predictable that engineers can calculate the temperature of a voice coil by comparing its heated resistance to its room-temperature resistance. This resistance shift can not only cause crossover frequencies to shift slightly, but can also result in a form of signal compression. An amplifier putting out, say, 12.5 watts into a speaker system with a measured 8-ohm impedance will deliver only 10 watts into 10 ohms, and less than 7 watts into 15 ohms. This is a dynamic effect, because the degree of compression varies with the temperature of the voice coil.

PROPER POWER RATINGS

Arriving at a speaker system's minimum- and maximum-power ratings is no easy task for its designer. You can assume that a manufacturer's minimum-power rating is derived by determining how much amplifier power is required to achieve a reference sound pressure level of X dB. But a speaker's sensitivity spec (which usually appears as X dB SPL with a 1-watt input) is actually more directly indicative of how much amplifier power you'll need to generate a specific sound level.

On the maximum-power side, a loudspeaker system ideally should be designed to have the highest power *capability* that can be achieved within cost and size constraints. A *rating*, on the other hand, depends on quite a few factors. The test signal used to derive a power rating must be chosen carefully. The ubiquitous pink-noise signal used in so many other audio tests is inappropriate for power testing because, unlike music, it contains equal amounts of energy in every octave. The RMS (root-mean-square) ratings used by some manufacturers imply the use of a single-frequency sine-wave test signal, which again is totally unlike a typical musical waveform in shape and energy content.

The most useful way for a manufacturer to specify a speaker's power-handling capability is to state, however loosely, the power it can withstand in a specific frequency range for a specific amount of time. This gives rise to a somewhat complex, but informative, maximum-power specification, such as that for the Allison Acoustics CD-7 system: "At least 15 watts continuous or average at any frequency. At least 35 watts peak at system resonant frequency. Over most of the frequency range, at least 350 watts for 0.1 second, 125 watts for 1 second, 60 watts for 10 seconds."

Note the distinctions made between transient (peak) wattages and continuous (average) levels. That difference is what enables you to play very loud music without problems, even though a continuous sine wave at anywhere near the same peak level would undoubtedly cause damage. In other words, your 100-watt (or even 200-watt) amplifier is safe to use with typical speakers rated at 50 watts maximum—so long as you don't feed them high-level continuous tones or pink noise, drive the amplifier into hard clipping, drop a tonearm on a disc, or lose a cable ground at high volume (which can generate huge amounts of hum).

In short, you have to abuse your speakers (and your ears) before disaster is likely to occur. And if you don't ask for trouble, it probably won't happen. □



**Edited by Ted Libbey
and Ken Richardson**

The Video Picture

In mid-March, pollster Louis Harris announced the results of his latest inquiry into the way Americans spend their leisure time. It was the fifth Harris poll in 15 years to deal with this general topic, and to touch specifically on the place of the performing arts in American society.

The results were sobering. According to Harris, Americans have less leisure time than they did earlier in the decade, and they are utilizing that time differently. Among the most significant trends: Americans have decided to devote less of their leisure time to live entertainment and more of it to their VCRs. Harris's findings have been challenged, however, by a number of performing-arts organizations that have been keeping records of their own. The American Symphony Orchestra League reports that annual attendance at orchestra concerts has risen from 22.8 million in 1980-81 to 25.4 million in 1985-86. The Central Opera Service (COS), which has been sending out questionnaires to every opera organization in the country since the 1950s, says its data show annual attendance at opera performances has steadily increased: from 6 million in 1970-71 to 8 million in 1974-75 to 11.1 million in 1980-81 to 14.4 million in 1985-86 to 16.4 million in 1986-87. The COS asserts that the 2-million jump in the last year flies in the face of Harris's conclusions and questions whether the poll, based on a random telephone sampling of 1,501 individuals, can be trusted.

What seems hard to dispute is the finding that home video *has* become a major source of entertainment, one with considerable appeal for people interested in the arts. My own feeling is that we are seeing just the beginning of a trend. As if to confirm that, Polygram has announced it is going ahead with the American release of classical programming in the 12-inch CD-Video format. The first 15 titles and an introductory sampler disc are scheduled for June release, with more to come in August and October. Two of the initial offerings are full-length ballets (*Swan Lake* and *Giselle*, both conducted by John Lanchbery, with Nureyev, Fonteyn, and Bruhn among the principals); the remainder are split between operatic and symphonic titles. On the way are a *Figaro* from Vienna conducted by Böhm, Ponnelle's La Scala production of *Bohème* conducted by Karajan, and his Vienna *Rigoletto* led by Chailly, along with Bernstein performances of Mahler, Beethoven, and Brahms; a Wagner disc from Solti and the Chicago Symphony; Carlos Kleiber's accounts of Beethoven's Fourth and Seventh Symphonies with the Concertgebouw; and a set of the *Brandenburg* Concertos from Harnoncourt. With Polygram in the picture, so to speak, I guess a lot of my precious little leisure time will be spent on videos, too.

Ted Libbey

Future Perfect

Manufacturers of audio equipment are constantly striving toward the goal of perfect reproduction of a musical performance. Naturally, much of this research and development takes place in the field of loudspeakers.

But perhaps the common loudspeaker itself is one step in the sound-reproduction process that could actually be eliminated.

Think of a future where medical scientists work at not only maintaining our health and saving our lives but entertaining us as well. The basic idea is simple. Advances in "human engineering" could enable your audio system to reach you at a level more personal than digital-ready headphones can—in fact, at a level even more personal than your Significant Other can. Imagine the day when your audio system can bypass your speakers—bypass your *ears*—and feed signals directly to your brain. No problem with speaker resonance or channel separation! No worry about frequency-response curves: Even the oldest listeners will be able to "hear" those highs. No concern about room acoustics either: The smallest closet in your house can "sound" like the greatest cathedral.

Today, electronics can keep a heart pumping. There have even been reports of devices enabling blind people to see shadows. Surely some day in the future, your grandchildren will be able to go home from work, sit down beside their CD or DAT or initials-still-to-be-invented machine, and insert small plugs into surgically implanted outlets behind their ears. Stereo imaging, specific hall acoustics, and other effects will be built into the recording. Special devices replacing today's amplifiers will convert the digital data into the impulses that your brain would normally expect to receive through your ears. Hit the "ears off" switch on the side of your neck and *Voila!* A seat in any private listening room becomes a seat in Carnegie Hall.

Of course, there will be limitations. For one thing, group listening will certainly pose a problem. But I'll leave that to the medical people to solve because... dammit, Jim, I'm an audiophile, not a doctor!

Andy Andrews III

Mr. Andrews, one of our readers, lives in Monongahela, Pennsylvania.

Readers are reminded that this portion of "Medley" is open to contributions. Send your 400-word article to Ken Richardson, Popular Music Editor, HIGH FIDELITY, 825 Seventh Ave., 8th floor, New York, N.Y. 10019. Keep a copy; original manuscripts will not be returned. We pay \$100 for each published article.

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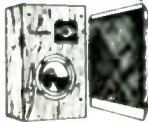
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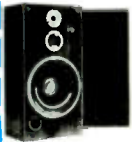
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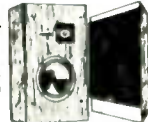
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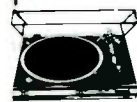
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Classical

SUMMER IS ICUMEN IN

Europe's summer festivals are a blend of music, glamour, and scenery, with something to delight nearly every taste.

By Theodore W. Libbey, Jr.

In conceiving of a festival for his works—to take place in a remote location during the summer months—Richard Wagner was, as usual, ahead of his time. He realized that with the arrival of warm weather, the big European cities emptied out and their cultural life came to a standstill. He also realized that the summer flight from the cities provided a ready audience for musical events in the provinces. Bayreuth thus became the prototype for the festivals found today in many European cities and towns—and, for that matter, around the American countryside as well. Some are of only a few days' duration, like the Bach festival held every other year in Ansbach, a small town between Munich and Nuremberg. Others last a couple of weeks, like the Kuhmo Chamber Music Festival in the forests of eastern Finland, where musicians come together almost as if they were members of a large, polyglot family at a reunion. At the other end of the scale are the Salzburg Festival and Turin's Settembre Musica, monthlong grab bags chock-full of musical delights.

Festival sites are usually chosen for the beauty of their settings, but occasionally for reasons of political geography. For instance, a modest summer chamber-music series takes place in the small town of Hitzacker on the Elbe simply because Hitzacker sits on the opposite bank of the river from East Germany. For years, West Germans have shunned border areas on the logical assumption that these will be the first regions to be overrun should hostilities erupt. Consequently, the Bonn government and the authorities of the individual Länder, or states (in Hitzacker's case, Lower Saxony), support festivals and other cultural events as a way of showing the residents that they haven't been abandoned.

In places where people *want* to go, festivals can be a good deal more imposing. The Munich Opera Festival—which runs from late June to late July

ILLUSTRATION BY STEPHEN PERINGER



SUMMER IS ICUMEN IN

and breaks the rules somewhat by occurring in a major city—centers around the Bavarian State Opera. But it includes a number of chamber-music and recital performances as well. The programming has traditionally featured the music of Mozart, Wagner, and Richard Strauss, all three of whom had ties to Munich. The performances are invariably on the highest level.

This summer's festival should be at the top of the list for operagoers, Strauss fans in particular: There will be new productions of *Die Liebe der Danae* (July 4), *Intermezzo* (July 10), and *Capriccio* (July 26), augmented by concert performances of *Guntram* (July 18) and *Friedenstag* (July 24), the latter marking the 50th anniversary of the work's premiere. The orchestra of the Bavarian State Opera will be in the pit for most of the performances; in addition, the Bavarian Radio Symphony Orchestra and the Bamberg Symphony will be on hand. Casts will include Lucia Popp, Brigitte Fassbaender, Sabine Hass, Felicity Lott, Hermann Prey, James King, Bernd Weikl, and Kurt Moll. Wolfgang Sawallisch and Gustav Kuhn are slated to share the conducting assignments. The performances take place in the handsomely restored National Theater and the beautiful, jewel-box-like Cuvilliés-Theater. The National Theater, incidentally, is one of the finest opera houses in Europe and one of the few that is air-conditioned—an important consideration if you happen to be in Munich during a heat wave. With beer gardens at your beck and call for pre- and post-opera replenishment, it's not a bad setup at all.

France contributes its share to the enjoyment of opera each summer, particularly at the splendid festival of Aix-en-Provence. This summer's festival (July 10–31) showcases three new productions: Mozart's *La clemenza di Tito* and *Così fan tutte* and Rossini's *Armida*. If you're in the mood for something heavier, head for nearby Orange, where performances of Wagner's *Die Walküre*, with Eva Marton as Brünnhilde, are scheduled for mid-July. The accent is on contemporary works at Avignon (July 9–August 4), where Pierre Boulez's *Répons* will receive its first "final creation" this summer. Other events include a musical-theater production—with music by Paul Mefano—based on Micro-

mégas, a character from Voltaire. Down in Languedoc-Roussillon, Radio France sponsors a festival with a wide range of offerings, from opera to vocal, chamber, and symphonic music. In addition, there are jazz programs every day. The festival is centered in Montpellier, but performances take place throughout the region. At this year's festival (July 13–August 3), well-known artists perform little-known works, while little-known artists perform well-known works. *Vive la différence*...

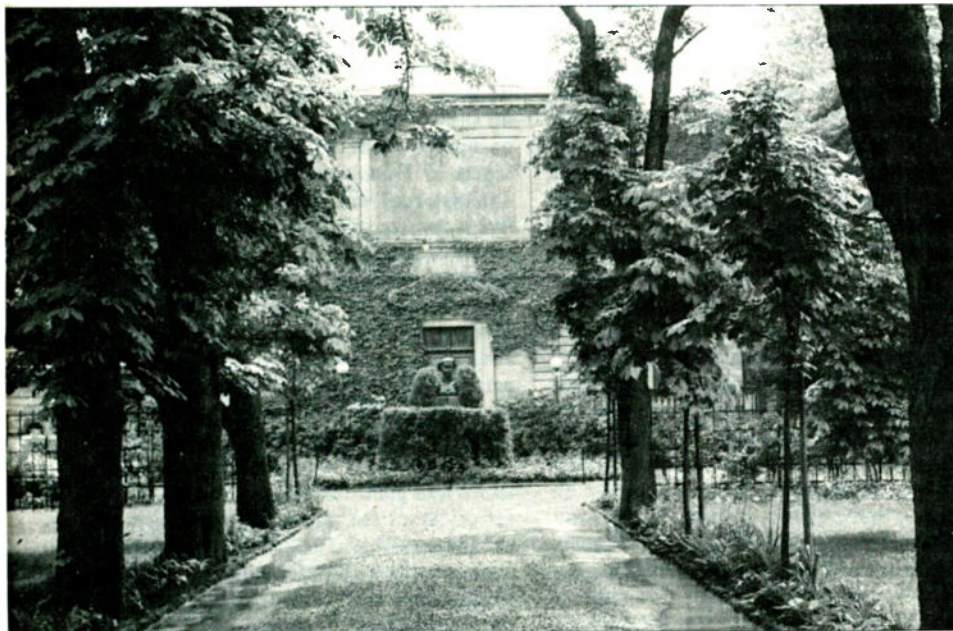
If your plans put you in Europe somewhat later in the summer, you should head for Lucerne or Turin. The International Festival of Music Lucerne celebrates its 50th anniversary this year with a jubilee program spanning 25 days (August 17–September 10). The emphasis is on symphonic music, and the list of visiting orchestras this summer is truly impressive. It includes the Berlin, Vienna,

New York, and Royal Philharmonics, the London Symphony, the Chamber Orchestra of Europe, the Concertgebouw and Philharmonia Orchestras, the English Chamber Orchestra, the Academy of Ancient Music, and the Budapest Festival Orchestra. As representatives of the host country, l'Orchestre de la Suisse Romande, the Collegium Musicum Zurich, and the Festival Strings Lucerne are slated to perform.

Unlike a number of Italian cities, Turin is no jewel box. Its architecture swung a touch too far to the fascist side during the '20s and '30s, and while it has managed almost miraculously to hide its horrible secret—it's the headquarters of Fiat—it can still seem on the surface a rather drab, densely packed industrial town. Behind that surface, however, you will find one of Italy's most civilized and least crowded metropolises—a place of unsuspected charm, fine food, and Italy's greatest wine.



HIGH FIDELITY ARCHIVES



HIGH FIDELITY ARCHIVES

Above: the approach to Wahnfried, Wagner's home in Bayreuth. Facing page: a vintage view of Salzburg's main cathedral, seen from near the Grosses Festspielhaus.

is also the home of an extraordinary music festival.

Turin's Settembre Musica is a well-kept secret, but it isn't likely to stay that way for long. The programming is exceptionally imaginative and well balanced, with a healthy emphasis on music of the 20th century but with plenty to attract listeners interested in the Romantic and Classical repertory. There are excellent offerings of Baroque music as well. A dozen of the city's churches play host to the choral, chamber, and recital programs that grace the festival's calendar, while the larger spaces of the Radiotelevisione Italiana (RAI) Auditorium and the municipal opera house, the venerable Teatro Regio, serve for symphonic programs. There are even a few outdoor events—one of the highlights of last summer's 10th-anniversary festival was a performance of the Berlioz Requiem in the Palazzo Reale, with the Moscow Philharmonic conducted by Dimitri Kitaienko and augmented by Les Cuivres Français, all echoing magnificently in the night air.

This summer's festival (August 31–September 24) opens with the Academy of Ancient Music and the London Symphony Chorus in a performance of Beethoven's Ninth under the baton of Christopher Hogwood. Other visitors include Neville Marriner and the Academy of St. Martin-in-the-Fields, who will perform Beethoven piano concertos with Murray Perahia (September 15); Wolfgang Sawallisch and the Bavarian State Orchestra (September 13); Georges Prêtre and the

Orchestra Sinfonica di Santa Cecilia (September 16); and the Orchestre de Chambre de Lausanne, with Vladimir Ashkenazy as soloist and conductor (September 8). Recitals by Elisabeth Söderström (September 21), Alexis Weissenberg (September 11), and Margaret Price (September 14) are planned, as is a joint program featuring violinist Uto Ughi and pianist Martha Argerich (September 9 or 12).

As in past years, the festival will explore the music of a leading contemporary composer in concerts and special presentations. This year's focus is on Iannis Xenakis, and the tribute includes the festival's closing concert, an all-Xenakis program performed by the London Sinfonietta.

The most impressive of all the European festivals—in terms of the sheer number of performances it offers each summer—has always been the Salzburg Festival. The Vienna State Opera is in residence from late July until late August and performs nearly every night. The Vienna Philharmonic, the Salzburg Mozarteum Orchestra, and a dazzling array of visiting orchestras give concerts, and there are eagerly awaited recitals by some of the finest singers and instrumentalists in the world.

This summer, Mozart holds sway. Four of his operas will be in the repertory: *Die Entführung aus dem Serail*, *Le nozze di Figaro*, *Don Giovanni*, and *La clemenza di Tito*. They make for a very interesting cross section of his mature work, and the casts are, for the most part, up to the high

Salzburg standard. The biggest clamor will be over *Don Giovanni*, since Herbert von Karajan is scheduled to conduct (August 6, 10, 16, 19, 22, and 26). The cast virtually duplicates that of Karajan's splendid Deutsche Grammophon recording, with Samuel Ramey in the title role, joined by Kathleen Battle, Anna Tomowa-Sintow, and Julia Varady. Riccardo Muti has the somewhat more difficult task of making a hit out of *La clemenza di Tito* (July 27 and 30 and August 2, 7, 13, 21, and 28), although he can expect some help from Carol Vaness and Gösta Winbergh in two of the opera's leading roles. Regulars at the Metropolitan will feel right at home as James Levine conducts the Jean-Pierre Ponnelle production of *Le nozze di Figaro*, though the Salzburg cast lacks the flash of the one Levine assembled in New York (July 29 and August 1, 9, 12, 18, and 23). Finally, veteran Horst Stein will be in the pit for *Die Entführung* (August 4, 8, 11, 17, 27, and 30), with Inga Nielsen and Kurt Rydl among the principals.

In addition to this mini-Mozart cycle, the festival will offer Rossini's *La Cenerentola* and Schoenberg's *Moses und Aron*. The former will be conducted by Riccardo Chailly and will feature Ann Murray, Francisco Araiza, Walter Berry, and Gino Quilico (July 28 and 31 and August 5, 15, 24, and 29). *Moses und Aron* will be conducted by Levine and staged by Ponnelle, with a cast that includes Theo Adam, Franz-Ferdinand Nentwig, and Philip Langridge (August 14, 20, and 25). The Vienna Philharmonic is in the pit for all opera performances.

Among the other highlights of the Salzburg Festival will be visits by the London Symphony Orchestra (with conductors Rafael Frühbeck de Burgos, Michael Tilson Thomas, and Jeffrey Tate), the Berlin Philharmonic (two performances of Brahms's *Ein deutsches Requiem*, Karajan conducting), and the Concertgebouw Orchestra (with Chailly conducting). The resident Vienna Philharmonic will perform under the batons of Sir Georg Solti, Seiji Ozawa, and maestros Karajan, Muti, and Stein. Alfred Brendel [HIGH FIDELITY, May] will present a Schubert cycle consisting of four programs; the Alban Berg Quartet will offer a complete cycle of the Beethoven quartets; and lieder programs will be sung by Hermann Prey, Christa Ludwig, Jessye Norman, and Lucia Popp (with Levine at the piano for Ludwig and Norman). As usual, chamber concerts, church concerts, Mozart matinees, and serenades have been programmed around some very appealing repertory and performers, and the schedule includes stage plays, ballet evenings,

SUMMER IS ICUMEN IN



and literature readings as well.

The big festivals, Salzburg included, are under attack these days. The general tone in the European press is that they represent high finance and high society rather than high culture. There is a story told by Salzburg regulars of a Munich banker who came to their festival a few summers ago for a weekend fling. He obtained choice tickets to the top events, booked a suite at one of the best hotels, dined with friends at the Goldner Hirsch and Purzelbaum, did some shopping in town, made sure his chauffeur was on hand to drive him around, and ran up a three-day tab of 30,000 marks—at today's exchange rate, almost \$20,000.

It is true that in Munich, Salzburg, Bayreuth, Granada, and Aix-en-Provence, one sees some very well-off members of the establishment: the silver-haired, big-city industrialists with fierce tans won at great expense on the slopes of Courcheval and at St. Tropez; the glamorous, athletic women dressed drop-dead chic; and the beautiful young people with their Porsches and BMWs, training for membership in the jet set. As much attention is paid to the ritual of intermission promenades as to the performances themselves. One comes away with the impression that applause is indiscriminate, since a thrilling performance—at least at some of the big festivals—often gets the same reception as a routine one.

Even at Bayreuth, one does not find the fervor of past eras (one imagines that only a resurgence of great singing would inspire that, and unfortunately that is a long way off). But one at least gets the impression that the festivalgoers are there for the music. For one thing, the festival is distinct from the town; it's a long hike up the hill on which the Festspielhaus is built, and no one dashes off for a big dinner after performances, which begin at 4 p.m. and can end well past 11 p.m. If one plans to eat, it has to be during the hour-long intermissions. There is a fancy buffet and an even fancier reserved-seating restaurant. But most of the faithful take bratwurst with beer or champagne, queuing up at the canteen outside the entrance to the Festspielhaus.

Inside the Festspielhaus, it's serious business, just as Wagner intended—wooden seats with no armrests, rows 50 seats across with no aisles, and no air-condition-

ing (in 1983, temperatures near 100 degrees four days in a row turned the Festspielhaus into an upper-crust kiln). Once in, you're in for a minimum of two hours. The ushers, mostly young women of high-school or college age—some of them bearing a haunting resemblance to the young women painted by Albrecht Dürer, who came from this part of Germany—wait for the rows to fill up, then draw the curtains over the entrance alcoves, lock the doors, and take up their watch on portable stools.

The big news at Bayreuth is the new production of the *Ring* that will make its debut this summer. New *Rings* come along at about five-year intervals; the last, a very conventional affair directed by Sir Peter Hall, made its debut to rather unforgiving notices in 1983. The conductor, Sir Georg Solti, bowed out after one season. This year, the director is Harry Kupfer, who attracted considerable attention a few years ago with his Bayreuth production of *Der fliegende Holländer*. The conductor is Daniel Barenboim, who in recent seasons has been entrusted with the Bayreuth *Tristan*. Also on tap this summer are *Lohengrin*, *Die Meistersinger*, and *Parsifal*. There will be three *Ring* cycles during the course of the festival, which opens July 26 with *Parsifal* and closes August 29 with *Meistersinger*.

Bayreuth, an hour's train ride up the Pegnitz from Nuremberg, serves as the administrative center of Franconia, an ancient region of Germany whose major cities are Nuremberg, Bamberg, and Würzburg. But to the zealous Wagnerite, Bayreuth is Mecca, Rome, and Jerusalem rolled into one. Wagner died 105 years ago, but the festival, still controlled by his heirs (although now subsidized by the German government), continues to be one of the most important annual occurrences in music.

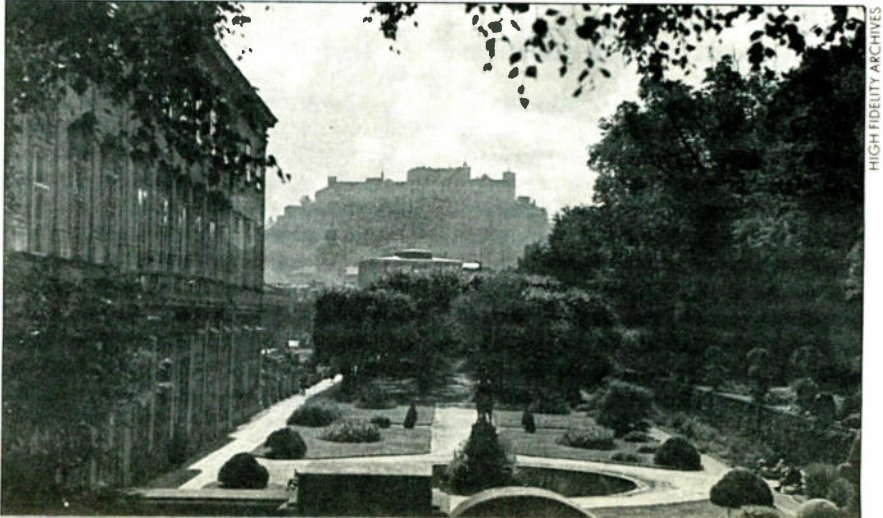
The performances that take place there are not, however, the only attraction for the Wagnerite visiting Bayreuth. In town

is the Villa Wahnfried, built by Wagner while the Festspielhaus was under construction. Wahnfried is now a Wagner museum, and the true believer may even be shown the ark of the covenant—the basement vault where the manuscript scores of *Tristan und Isolde* and *Parsifal* are kept. As I was leaving through *Tristan* five summers ago, Manfred Eger, the director of the museum, told me he had just turned down an offer of \$6 million for it. Wahnfried is also the final resting place of Wagner, his wife Cosima, and her father, Franz Liszt. Curiously, it was Liszt who actually died in Bayreuth; Wagner, getting the jump on Thomas Mann's protagonist Gustave Aschenbach, died in Venice.

The town of Bayreuth has some nice shops and good restaurants, but it is all a far cry from the glamour of Salzburg or the charm of Aix. The locals go about their business with an air of indifference toward the pilgrims, who themselves are pretty indifferent to everything unconnected with the festival. One can always spot the Bayreuth pilgrim, and it is easy to distinguish the seasoned veteran from the novice by his look of self-assurance. At a time when the nearest available accommodations are two towns and 20 kilometers away, he has a single room with bath at the Königshof, reserved months earlier. Or, if he is on a tighter budget, he has a room in one of the hundreds of homes that take in guests during the festival. With would-be Wagnerites crowding the entrance to the Festspielhaus at 10 a.m.—displaying, with baleful expressions, hand-lettered signs that read "*Ich suche Parsifal*"—he has his \$175 seats in the center of the 15th row, and he has had them since January.

If you don't already have your tickets for this summer's Bayreuth Festival, you can forget it. Tickets are apportioned by country, and the United States gets a painfully small number each year. But what's true of baseball is true of Bayreuth: There's always next year. □

The Mirabell Garten, with the Hohenfeste Salzburg in the distance



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San Francisco's Sonic Boom



BOB ADLER (INSET); LARRY MERKLE

Herbert Blomstedt (inset); below, the Davies Symphony Hall stage, which was extended into the seating area especially for the November 1987 sessions.

The San Francisco Symphony
is making records again,
for its new label, London.

by Paul Moor

As a recording orchestra, the San Francisco Symphony has had its ups and downs, but its new contract with London (as the British record company Decca is known in this country) gives every indication of a new up. The orchestra has a distinguished recording history. It made its first recording in 1925 under Alfred Hertz, who continued to record with the ensemble for five years. Between 1941 and 1960, the orchestra really hit its recording stride. This was the halcyon era of Pierre Monteux, who led the orchestra from 1935–52 and returned to record with it in the years that followed. Aside from build-

ing a discography of purely orchestral works (I remember with particular affection an incomparable performance of Ravel's *La Valse*), Monteux and the orchestra recorded with first-rank soloists, including Marian Anderson, Yehudi Menuhin, and Jascha Heifetz.

Trivia buffs will be interested to know that Leopold Stokowski and the San Francisco Symphony made two records together: in 1952, an LP of *Boris Godunov* excerpts (featuring Nicola Rossi-Lemeni) and, in 1953, Morton Gould's *Dance Variations* with the duo-pianists Arthur Whittemore and Jack Lowe. Even the ill-

starred epoch of Enrique Jordá (1954–63) brought recordings with Alexander Brailowsky, Gary Graffman, and Artur Schnabel, but between 1963 and 1970, nobody showed any real interest in recording the orchestra under Josef Krips. Things looked up in 1972, when Seiji Ozawa (music director from 1970–76) launched a four-year spurt of recording activity that produced five LPs for Philips and Deutsche Grammophon. After that flurry, five barren years passed before Philips signed up San Francisco once more, this time with Edo de Waart—who also recorded works by John Adams, then the orches-

tra's composer-in-residence, for Nonesuch and ECM.

The arrival of Herbert Blomstedt, in September 1985, as the San Francisco Symphony's music director has brought about a love feast between players and conductor of such intensity that one hesitates to even mention it for fear of putting some sort of whammy on it. The quality of music-making by the orchestra under Blomstedt (irreverently but affectionately referred to by at least one player as Dagwood Blomstedt) has attracted wide attention; last October, a visiting Peabody Conservatory professor, who regularly hears all the major orchestras on the East Coast, went away from Blomstedt's Mahler Third enthusiastically ranking this western band alongside the Philadelphia Orchestra and the Boston Symphony.

Blomstedt revived the orchestra's recording activities in late 1986 with a one-shot Nonesuch gig combining two works by Charles Wuorinen, the current composer-in-residence: *The Golden Dance* and the Third Piano Concerto, with San Francisco's part-time resident Garrick Ohlsson as soloist. That set the scene for the extensive plans (announced in September 1987) for London to record nine big works with the orchestra by 1989.

Just as it may startle some people to hear San Francisco's symphony ranked with the orchestras of Philadelphia and Boston, so did it come as a bemusing surprise to some of us attending the initial sessions last November to have Jimmy Lock, Decca's chief recording engineer in London, go into transports about Davies Symphony Hall: "If only we had this hall in Chicago!" Perhaps Lock's enthusiasm for halls depends on their capacity to become putty in his engineering hands, for anyone who knows Davies Hall in its usual state would barely have recognized it. A vast expanse of plastic sheeting covered the entire ground-floor seating area. Even more striking, a \$24,000 special construction job, undertaken just for the London sessions, had extended the stage level out into the auditorium to cover the first several rows of seats. "When you attend a concert here," Lock said, "you have the sound all around you, and the orchestra sounds fine. When you hear the same music through your speakers at home, you have another environment, so here I wanted to bring the orchestra more out into the acoustics of the hall. When you hear [the orchestra] at home, it'll sound much more the way it sounds when you hear it here."

Decca's delegation from London also included Andrew Cornall, producer of this project; Ray Minshull, director of artists and repertoire for the label; and John Pellowe, who convincingly behaved as if he regarded the control room's daunting array of switches, buttons, monitors, and

other indescribable items—\$400,000 worth of them—as a mere piece of cake. Cornall originally trained as an oboist and composer at Manchester University and the Royal Northern College of Music; he got into producing classical recordings at the age of twenty-four, 11 years ago. During the Davies Hall sessions, he followed the score constantly, and his intermittent conversations with Blomstedt revealed that he possesses extraordinarily perceptive ears. The same applies to Leif Bjaland, the orchestra's assistant conductor, who stuck close to the control room with his own spiral-bound score.



Blomstedt and producer Andrew Cornall confer, scores spread before them.

Blomstedt, whom I once described as looking like a Swedish bank official [see *MUSICAL AMERICA*, October 1985], does not belong to the sweatshirt, T-shirt, or sport-shirt schools of recording conductors; at the sessions, he looked cool, trim, and collected in an ordinary beige dress shirt. A devout Seventh-Day Adventist, Blomstedt stipulated in his contract with the orchestra that he would not work on his church's Sabbath, which extends from sundown Friday to sundown Saturday. Naturally, that applies to rehearsals, but Blomstedt makes an exception for concerts; he doesn't regard them as work. I attended a Sunday-night session, at which the orchestra wrapped up its taping of Nielsen's marvelous Fourth Symphony (*The Inextinguishable*). The sessions had begun the night before, on Saturday, but only after dark.

Also recorded that weekend were two Hindemith works, the *Symphonic Metamorphosis on Themes of Carl Maria von*

Weber and the *Trauermusik* for viola and strings, which the composer wrote literally overnight in 1936, for the BBC, to commemorate the death of King George V. Hindemith himself played the viola part in the world premiere in London the following day; in San Francisco, the orchestra's extraordinary first violist, Geraldine Walther, played it—and brilliantly. I missed her recording session, but in performance two nights before, her body language made her working relationship to Blomstedt crystal-clear; she played directly to him, as if totally unaware of the audience.

The sessions resumed later in Novem-

ber, when the orchestra recorded Hindemith's *Mathis der Maler* Symphony and Nielsen's Fifth Symphony. London's initial contract with San Francisco also comprises Strauss's *An Alpine Symphony*, Grieg's incidental music to Ibsen's *Peer Gynt*, and two more Nielsen symphonies (the First and Sixth)—obviously a sizable step toward a complete Nielsen cycle. In light of the superb Nielsen cycle—all the symphonies and concertos—that Blomstedt recorded for EMI during his years with the Danish Radio Symphony Orchestra, one hopes London will decide to make this possibility a reality. □

[Editor's note: The first two recordings by the San Francisco Symphony on London are slated for May release in the U.S. and should be available as you read this. They contain the fruits of the sessions described here: one disc of the Hindemith works and another coupling the Nielsen Fourth and Fifth Symphonies.]



By Robert E. Benson, Thomas L. Dixon, David Hurwitz, Paul Moor, Robert R. Reilly, and James Wierzbicki

MAHLER SONG CYCLES: BAKER

Dame Janet Baker's performances of the *Kindertotenlieder*, *Lieder eines fahrenden Gesellen*, and especially the five songs to poems by Rückert have long stood as touchstone Mahler interpretations. With all three sets of songs on one CD, this reissue recommends itself. Sir John Barbirolli, leading the Hallé and New Philharmonia orchestras, is more than a mere accompanist; he offers his uniquely refined perspective on these wonderful works. To hear these two artists collaborate on the Rückert setting "*Ich bin der Welt abhanden gekommen*," one of the greatest songs ever written, is alone worth the price of the disc. This is a must for all lovers of song and a useful entry into Mahler's world for those put off by the symphonies. The digitally remastered sound is very good. Playing time: 64:29. (Angel EMI CDC 47793.)

D.H.

MOZART PIANO CONCERTOS: CURZON, ENGLISH CHAMBER

It was occasionally said by people in the know that Clifford Curzon was not only difficult to record but that he himself found recording a painful process. Perhaps that is why, in the early LP days, a Curzon record was not so much a release as it was an event, at least to those who were dedicated to this master chamber musician among great pianists.

As for this CD containing Mozart's Piano Concertos Nos. 20, K. 466, and 27, K. 595: If I were on the proverbial desert island and had but one Mozart concerto disc to take along (choice limited to CD, of course), this would be it—no competition. Whatever reservations either Curzon or conductor Benjamin Britten may have had that kept this "event" on the pre-release shelf, I, for one, cannot spot fault. One of the great recordings of the century. Playing time: 65:27. (London 417 288-2.)

T.L.D.

HINDEMITH "DAS MARIENLEBEN": JANOWITZ

Hindemith's song cycle *Das Marienleben*, set to 15 Rilke poems, is one of the composer's earliest masterpieces. It is an extremely personal and affecting work, and one that occupied him for much of his creative life. First composed in 1923, it was later thoroughly overhauled, and it is the

revised version for soprano and piano accompaniment, completed in 1948, that is performed here. The first song in the cycle, "*Geburt Mariä*," introduces a melodic idea that permeates Hindemith's subsequent compositions, including the Cello Concerto and Symphony in E flat of 1940 and the *Mathis der Maler* works. Despite his reputation as a musical utilitarian, Hindemith possessed a very substantial lyric gift, which is particularly evident in the orchestral arrangements he made of some of these songs.

Gundula Janowitz and accompanist Irwin Gage collaborate in an eloquent performance, filling one CD instead of the original two records. Unfortunately, the notes include only the German text, which is a major drawback when the meaning of the words is so important. But the performance and the work deserve to be heard, and in all ways musical, this disc is thoroughly recommendable. Playing time: 72:24. (Jecklin Disco 574-2. Distributed by Koch Import Service, 95 Eads St., West Babylon, N.Y. 11704.)

D.H.

WALTON CHAMBER WORKS: ENGLISH STRING QUARTET

I defy anyone not already in the know to listen to William Walton's Piano Quartet for the first time and guess the composer's age correctly. If it doesn't rank with the octet Mendelssohn wrote at sixteen, this score, which Walton completed in 1919 at the age of seventeen, still commands great respect. The original version apparently had an unrealistically demanding piano part, but Walton thought enough of the music to return to it, first in 1921 and again in later years. The version performed here is the revised edition of 1976, and it presents no technical problems to the members of the English String Quartet and pianist John McCabe.

Walton's only surviving string quartet, in A minor, dates from 1947. By then, he had developed a mature style that the experienced listener will recognize after only a few bars. Walton's characteristic wit, rhythmic vigor, and surging, soaring lyricism are present in both works; the youthful piano quartet has some polytonal passages that in 1919 must have sounded downright *risqué*. In his accompanying notes, Luciano Iorio (the violist here) goes a bit overboard when he calls Walton "one of the giants of 20th-century music," but

Walton's relatively small *oeuvre* does manifest an exceptional talent, which these works reflect. All five participants perform both pieces with proficiency and dash. Playing time: 58:25. (Meridian CDE 84139. Distributed by Harmonia Mundi, U.S.A.)

P.M.

"SCHEHERAZADE": PHILHARMONIA, ASHKENAZY

This is one of the best performances of Rimsky-Korsakov's *Scheherazade* on CD. The Philharmonia Orchestra plays brilliantly, and Vladimir Ashkenazy shows an unexpected sensitivity to the texture of the score. Christopher Warren-Green is the featured violin soloist, and the first-desk players of the Philharmonia acquit themselves admirably throughout. The performance is somewhat disfigured, however, by Ashkenazy's grunting at some crucial moments—particularly in the second movement, beginning at 4:15. The colorful suite from the opera *Tale of Tsar Saltan* is not as effectively presented; this is some of Rimsky-Korsakov's most imaginative writing, but there is little magic in Ashkenazy's performance. Another *Tsar Saltan* excerpt, *The Flight of the Bumblebee*, fills out the disc. London's engineering is excellent—rather dry but wide-ranging, well balanced, and with plenty of impact. My favorite recorded performances of *Scheherazade* remain the Fritz Reiner/Chicago Symphony version on RCA (coupled with Debussy's *La Mer*; RCD 1 7018) and the Thomas Beecham/Royal Philharmonic account on Angel EMI (coupled with Borodin's *Polovtsian Dances*; CDC 47717). Playing time: 66:54. (London 417 301-2.)

R.E.B.

FAURÉ "PÉNÉLOPE": MONTE CARLO, DUTOIT

Fauré's three-act opera *Pénélope*, his most ambitious work, is a magnificent piece of music. The present performance—featuring the considerable talents of Jessye Norman, Alain Vanzo, José Van Dam, and Philippe Huttenlocher, among others—is about as good as we have any right to expect. The work, Fauré's only real opera, may be static on stage, but on record there's no question that the composer lavished much of his songwriting mastery on it. Most of the time, it's just plain gorgeous. Charles Dutoit and the Monte Carlo Opera Orchestra deserve credit for un-

earthing yet another overlooked French masterwork. Erato's sound and CD production on this two-disc set are both, for once, of equally high caliber. Playing time: 124:00. (RCA Erato ECD 88205.) *D.H.*

ELGAR, SULLIVAN, AND HERBERT CELLO WORKS: LLOYD WEBBER

This new Angel CD serves as a showcase for Julian Lloyd Webber's fine cello playing and offers some pleasant and otherwise unavailable music. There is Elgar's short but fully mature *Romance*, Opus 62, originally written for bassoon, and the premiere recording of a reconstruction of Sir Arthur Sullivan's Cello Concerto in D, a rather conventional piece that sounds as if it were written even earlier than it was (1866). Victor Herbert's lyrical Cello Concerto No. 2, in E minor, fills out the disc. It is good fun and quite lovely, though hardly comparable in stature to the work it is famous for inspiring, Dvořák's great Cello Concerto. Sir Charles Mackerras and the London Symphony Orchestra provide the excellent support one would expect, and the digital sound is fine. Playing time: 46:29. (Angel EMI CDC 47622.) *R.R.R.*

CANTELOUBE "CHANTS D'Auvergne": DE LOS ANGELES

Victoria de Los Angeles's performances of Canteloube's luscious *Chants d'Auvergne* have long been among the preferred versions. Angel has reissued virtually all of the songs from the original two-LP set on one CD, which contains more than 70 minutes of music. All of the complete sets on CD (Te Kanawa, Davrath, von Stade) require two discs with additional fillers, so unless *absolute* completeness is a must, this compilation makes excellent musical and economic sense. Jean-Pierre Jacquillat and the Lamoureux Orchestra provide suitable support, and the sound has transferred very well. Playing time: 70:23. (Angel EMI CDC 47970.) *D.H.*

STRAVINSKY "LES NOCES": PERCUSSIONS DE STRASBOURG

Les Percussions de Strasbourg is an almost preternaturally accurate and imaginative group of percussionists that concentrates on contemporary music written for what the Germans call *Schlagzeug*—instruments to be beaten. Here the group, under the direction of Roland Hayrabedian, joins forces with the Choeur Contemporain, vocal soloists, and other instrumentalists in works by Stravinsky and the French composer Maurice Ohana, with uneven but generally favorable results.

Tension and accuracy characterize the performance of Stravinsky's *Les Noces*, but the singers' nondescript pronunciation of the original Russian text provides a clue as to why they sing their words with such detachment: They probably just don't un-

derstand them. This unfortunate impersonality denatures Stravinsky's forceful music to a considerable extent.

Ohana (b. 1914), a minor but far from uninteresting composer, took the texts for his *Cantigas* (1953–54) from an Argentine anthology of Spanish religious poetry ranging from the 13th to the 16th centuries. Some of these works, particularly the "*Cantiga de vela*" and the "*Cantiga del Azahar*," reveal a sensitive composer who can, when he wants to, pack quite a wallop. A grant from the Ministry of Culture in Paris subsidized this recording. Washington, please copy. Playing time: 51:45. (Pierre Véron PV 787032. Distributed by Harmonia Mundi, U.S.A.) *P.M.*

STRAUSS "SALOME": VIENNA, KARAJAN

Digital remastering has cleaned up the slightly murky sound of this wonderfully decadent performance of Strauss's most sensational opera. Hildegard Behrens's impulsive Salome, José Van Dam's noble Jochanaan, and Karl Walter Böhm's sniveling Herod make this one of Herbert von Karajan's best operatic efforts, mainly because these singers can hold their own against whatever he and a supersensitive Vienna Philharmonic toss up out of the pit. This two-CD set is certainly worth having, even if you already own Sir Georg Solti's slightly more sadomasochistic version on London. Playing time: 105:16. (Angel EMI CDCB 49358.) *D.H.*

POULENC SONGS: BERNAC, POULENC

Pierre Bernac stands high on the list of singers whose intelligence, musicality, imagination, and artistry more than compensate for whatever may be lacking vocally. These recordings date from the very end of the collaboration between Bernac and Francis Poulenc, which lasted from 1935 to 1960. Don't let the recordings' age put you off, though. Adès has electronically refurbished them to a fine sheen, and both artists rank as models when it comes to performing French music of this century. Particularly in the matter of French diction, almost every singer alive could learn from Bernac's recordings. His performance of that extraordinary song "*Sanglots*," the last of Poulenc's *Banalités*, itself makes his a disc to cherish.

This collection—containing 33 of the more than 100 *mélodies* Poulenc composed—covers a broad literary range, from camp and slyly mischievous to solemn and melancholy. The disc has only one drawback, but it is a serious one: Adès has skimmed by including not the entire poems but mere paraphrases of them, in French and English. That leaves the uninformed listener in the dark when it comes to, for instance, the wicked Gallic "*Ah!*"

that concludes "*L'Offrande*" in the *Chansons gaillardes*. Playing time: 49:23. (Adès 14 114-2. Distributed by Harmonia Mundi, U.S.A.) *P.M.*

THE ART OF THE TRANSCRIPTION: WILD

No one alive surpasses Earl Wild in the transcription repertoire: His sense of the music—and his taste, feeling, and love for it—make listening to any item in this recital virtually an unblemished delight. Yet certain minor reservations come to mind. For instance, Wild's account of the Strauss/Schulz/Evler *The Blue Danube* Waltz impresses mightily on its own terms. But when compared with the classic performances of Moritz Rosenthal and Josef Lhévinne, Wild's rhythmic mannerisms emerge, slightly distorting the natural flow of the music.

Such hairsplitting cautions aside, anyone can purchase this two-CD set with confidence, knowing it is an investment in pianistic gilt-edged securities. And with a lovely essay by Harold Schonberg included in the notes, how can any piano rat go wrong? Audiofon's production is top-of-the-line, as usual. Playing time: 86:58. (Audiofon CD 72008-2.) *T.L.D.*

"WELCOME EVERY GUEST": CONSORT OF MUSICKE, ROOLEY

John Blow (1649–1708) was one of his era's most prolific composers of English church music. But he wasn't so involved with the production of sobering material that he didn't have time to effect a lighter touch. Indeed, worldly pleasure of one kind or another is the subject of most of Blow's 150 or so songs. The best of these were published in 1700 in *Amphion Anglicus*, the collection that is the source for this latest effort from Anthony Rooley and his London-based Consort of Musicke.

Only the hiccups that serve as a coda to the final number, a drinking song titled "Employed All the Day Long on Public Affairs," seem feigned; otherwise, the feeling of effervescence that flavors all 12 pieces is both real and contagious. Soprano Emma Kirkby, still spinning out her lines with hardly a hint of vibrato, sounds wonderful. So does bass David Thomas, except when he's straining his throat to reach the gimmicky low Bs and C sharps that apparently were well within the reach of Blow's friend Richard Leveridge. The accompaniments, played by lutenist Rooley and six colleagues, are perhaps even more noteworthy than the singing. These days, there are many vocalists doing justice to the early-18th-century English song repertory, but relatively few instrumental groups infuse the material with this much rhythmic animation. Playing time: 51:54. (Nonesuch 79156.) *J.W.*

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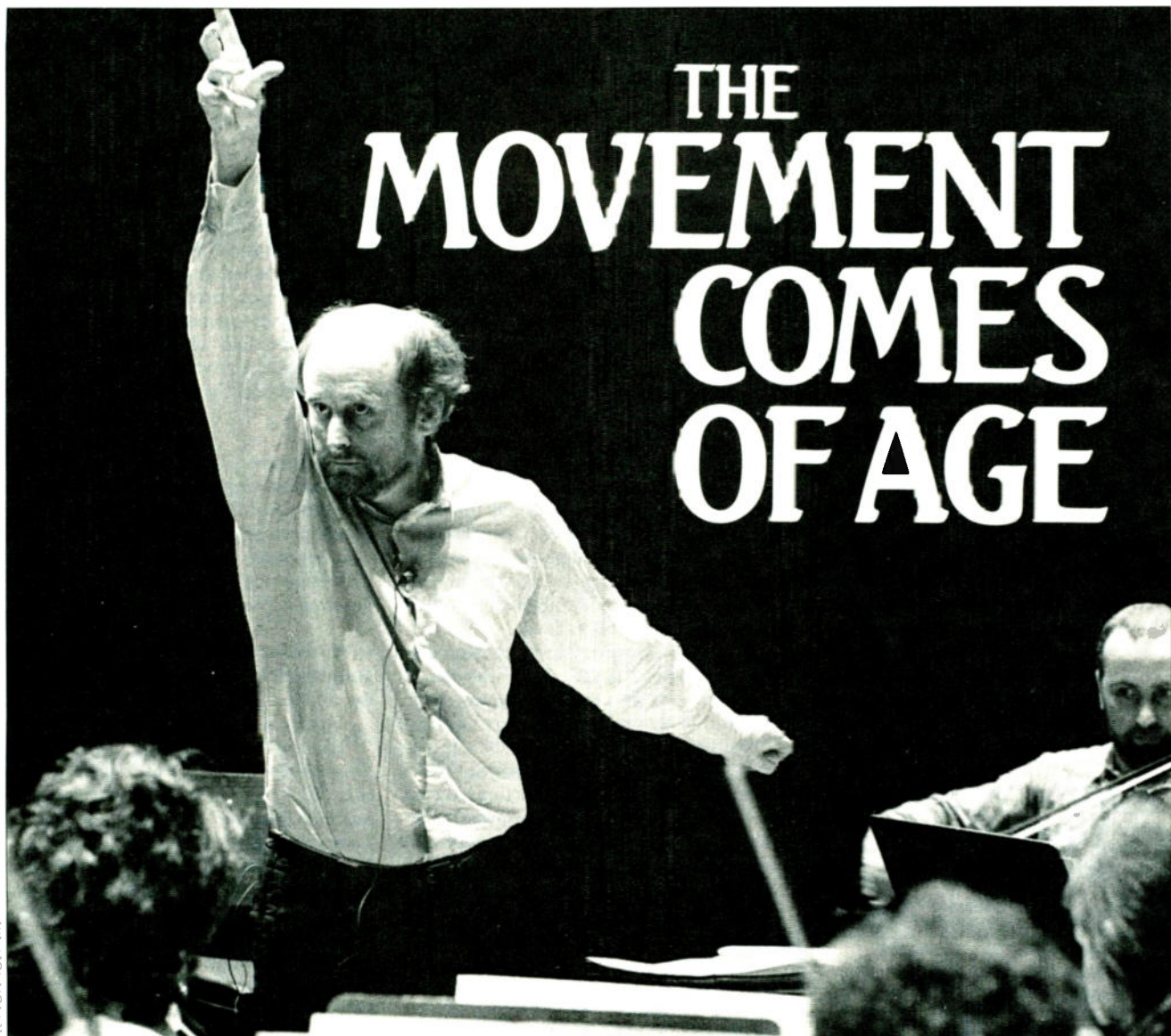


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THE MOVEMENT COMES OF AGE



ALF VON OETTINGER

Roger Norrington presides over the performance of a Beethoven symphony. An innate theatricality comes to the fore in his new recording of the Ninth.

BEETHOVEN: Symphonies: Nos. 2, in D, Op. 36; and 8, in F, Op. 93.

London Classical Players, Norrington.
David R. Murray, prod. Angel EMI CDC 47698 (D). □ □

BEETHOVEN: Symphony No. 9, in D minor, Op. 125.

Kenny Walker, Power, Salomaa; London Classical Players, Schütz Choir of London, Norrington, David R. Murray, prod. Angel EMI CDC 49221 (D). □ □

Like rock stars, the leaders of the historical-performance movement seem to have limited life spans. The darling of one season is passé the next, as devotees discover a new object for their affection. As far as early 19th-century repertory is concerned, Roger Norrington is this year's darling, replacing Christopher Hogwood in the vanguard of the movement.

To those on the sidelines, such shifts in loyalty can seem positively adulterous.

Yet there are tangible reasons behind Norrington's ascendance. The attitudes toward performance that he embodies represent the interpretive maturation of the historical-performance movement. And with that movement firmly entrenched in the music of the 19th century (Norrington himself has reached Berlioz, in performance), his arrival has come not a moment too soon. [For reflections on the movement when it was on the threshold of Beethoven, see Michael H. Gray's "On to the Past," December 1986.—Ed.]

Norrington and the London Classical Players are in the process of recording the complete Beethoven symphonies for EMI. On the basis of these two discs—the first two installments in the cycle—it is possible to make several generalizations about Norrington's approach. First, he is not a pedant: Although thoroughly aware of the latest scholarship, he knows that musicol-

ogy is a less-than-exact science in which compromise and intuition are as important as research. In the present recordings, for instance, he uses a large orchestra (as many as 65 players for the Ninth Symphony), rejects Hogwood's fortissimo continuo, and selects operatically trained singers as his soloists. Second, Norrington views tempo as the crucial factor in the performance of these works.

Unlike those commentators who dismiss Beethoven's metronome markings as stemming from either a defective machine or an eccentric composer, Norrington takes Beethoven at his word. The result is not simply a matter of faster tempos, as we have come to expect from other exponents of the period-performance movement (although there are some very fast ones in these accounts, especially in the first and last movements of Symphony No. 2 and in the finale of Symphony No. 8). If one be-

Classical

lieves Beethoven's metronome markings, slow movements were not intended to be so slow—and in Norrington's account, the often lugubrious Adagio of the Ninth has a comfortable walking pace, while the Allegretto of the Eighth sparkles as playfully as a Rossini overture. Similarly, according to Beethoven and Norrington, fast movements were not always so fast. The pastoral trio in the scherzo of the Ninth, for instance, is taken at the same tempo as the scherzo itself, and the alla marcia section of the finale lumbers along in a pleasantly folksy fashion. The biggest shock comes in the instrumental (and later vocal) recitative of the Ninth's finale: Taking Beethoven's instructions literally ("in the character of recitative but in tempo"), Norrington maintains the tempo of the main body of the movement rather than slowing it to a ponderous crawl. Bass Peteri Salomaa sounds a bit constrained by the rapid pace of this recitative, but the overall effect is convincing.

Of course, Norrington could not hope to play at Beethoven's tempos unless he employed period instruments. Modern instruments are simply not responsive enough; their tone is too sustained, their articulations too sluggish for a whirlwind pace. But period instruments, especially in the hands of such nimble virtuosos as the London Classical Players, can negotiate Beethoven's tempos with ease. Together, the reedy, strongly differentiated winds; the crisply articulated, often vibrato-less strings; the pungent, wonderfully nasty-sounding valveless horns; and the ferocious timpani (whacked with wooden sticks) create not only perfectly balanced textures in which no section overwhelms another, but also an ambience in which these tempos can be realized.

There is, however, more to Norrington's approach than tempo. With years of experience as an opera conductor, Norrington is a dramatist at heart, and his infallible theatrical sense results in the most vivid and personal historical performances I have heard. He maximizes both the humor and terror of Beethoven's sudden tempo contrasts, adds crescendos and diminuendos to shape the musical line, and inserts ritardandos and momentary hesitations to clarify the phrasing. Until now, such interpretive subtleties have been unheard of in original-instrument performances of Classical symphonies. A quick comparison with Hogwood's recording of Beethoven's Symphony No. 2 (Oiseau-Lyre 414 338-2) reveals just how far things have come—Hogwood's Beethoven suddenly seems inflexible and didactic in its rigidity, with little personal detail to enliven it.

As far as Norrington's stylistic compromises are concerned, I take issue with only one. In the finale of the Ninth Symphony, the contrast between historical instruments and operatically trained vocalists is a bit jarring. Perhaps there are no singers in the early-music world who can negotiate Beethoven's demanding solo parts. And it must be said that Norrington's full-throated soloists (Yvonne Kenny, Sarah Walker, Patrick Power, and Salomaa) are certainly first-rate. Yet, despite their attempts at light tone and crisp articulation, the throbbing vibrato—especially Salomaa's—seems out of place in such a pristine context. Norrington's Schütz Choir sings in lusty modern style as well, albeit with startlingly lucid articulations.

I can pay Norrington no greater com-

pliment than to say that, midway through the Ninth Symphony, I forgot I was listening to a historical performance. My concern with issues of tempo, articulation, and dynamics disappeared, and I was aware only of the music. And the music I heard more than justified the approach. Playing time for Symphony No. 9: 62:23. Playing time for Symphonies Nos. 2 and 8: 58:40.

K. Robert Schwarz

[Angel informs us that two additional releases in Norrington's Beethoven cycle are due this year: Symphonies Nos. 1 and 6 should be arriving by mid-to-late summer, and Symphony No. 3, with the Overture to The Creatures of Prometheus as filler, is expected in the fall.—Ed.]

ATTERBERG: Symphony No. 2, in F, Op. 6; Suite No. 3, for Violin, Viola, and Strings, Op. 19, No. 1*.

Roehr*, Saulesco*; Swedish Radio Symphony Orchestra. Westerberg, Frank Hedman, prod. Swedish Society Discofil SCD 1006 (A). (Distributed by International Book and Record, 40-11 24th St., Long Island City, N.Y. 11101.)

With Chandos exploring the symphonic output of Bax, Olympia offering a Glazunov cycle, and BIS undertaking an Alfvén cycle, the time has come for truly worthy, modern recordings of the music of Sweden's greatest symphonist, Kurt Atterberg (1887-1974). Lacking any better comparison at the moment, one might characterize Atterberg as Scandinavia's counterpart to Bax—in other words, a "brazen romantic" (as Sir Arnold accurately described himself). But with Atterberg, there are two differences: a greater involvement in folk music and, on most occasions, a more open and inspired melodic gift.

This disc serves as a useful introduction to Atterberg's style, despite the mid-1960s origin of the performances. In addition to Symphony No. 2, it offers a lovely rendition of Atterberg's most popular—or, at least, most often recorded—work: the Suite No. 3 for violin, viola, and strings. Tonal, melancholy, and quite moving, the suite has achieved considerable popularity (even if limited to Scandinavia). The reasons will be apparent on hearing this account (sympathetically conducted by Stig Westerberg, one of the composer's foremost champions), which easily holds its own against the available competition. The performance of the Second Symphony, while not sensational, is

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certainly worthy as well.

So welcome to CD, Master Atterberg. Let's hope there will be more to come. Playing time: 52:29. *Thomas L. Dixon*

BABBITT: Works for Piano.

Taub. Robina Young, prod. Harmonia Mundi HMC 905160 (D). ◉ ◻

Three Compositions; Duet; Semi-Simple Variations; Partitions; Post-Partitions; Tableaux; Reflections, for piano and synthesizer; Canonical Form; Lagniappe.

No one could ever accuse Milton Babbitt, long established as one of this country's leading composers, of writing down to his audience. Some years ago, critic B. H. Haggin gave one of his books a title that today would brand him a sexist: *Music for the Man Who Enjoys "Hamlet."* Babbitt composes for the person who enjoys *Finnegans Wake*—plus, perhaps, Einstein on relativity.

Even his earliest effort for piano, *Three Compositions*—a work strongly reminiscent of Schoenberg—demands undivided attention. The juxtaposition of piano and synthesized tape makes *Reflections* considerably less austere than the rest of the works on this collection, but even so, at 10:23, it requires maximum concentration from the listener.

Robert Taub plays all these works with exemplary dedication and proficiency. In the accompanying leaflet, he proclaims: "The music of Milton Babbitt must be played from the heart." I confess to difficulty imagining the day when music lovers will listen to this disc and say to one another, "How beautiful! How moving!" But then, history's progress has made monkeys out of us who write about music before, and no doubt will continue to. I also can't help musing about Robert Taub's reception in Germany, where people may look at his name and read "Robert Deaf." Playing time: 55:34. *Paul Moor*

BIBER: 15 Sonatas for Violin and Continuo ("Mystery"); Passacaglia for Solo Violin.

Johnson, O'Sullivan, Milnes*. Timothy Martyn, prod. Newport Classics NC 60035 1/2 (D, 2).*

Heinrich Ignaz Biber is one of the Baroque's best-kept secrets. Although he was a composer of the first rank, his works are seldom performed today and even less frequently recorded. Certainly among his greatest achievements are the *Mystery* Sonatas—15 works, each employing a different tuning of the violin, each tied to a different *Mystery* of the Rosary. In this new recording, Evan Johnson performs them on several different period violins, joined by Loretta O'Sullivan on cello and Eric Milnes on harpsichord and organ.

It is enlightening to compare Johnson's

approach with that of Franz Josef Maier, whose 1983 recording for Deutsche Harmonia Mundi has already appeared on CD in Europe but is not as yet scheduled for domestic release by Angel EMI. Johnson clearly views the sonatas as program music and as dramatic pieces full of passion, joy, and pathos. His playing is tremendously expressive, and he exhibits great panache—if also some wayward intonation and thinness of tone—in the many virtuoso passages contained in the pieces. Maier takes a different tack on his recording. In his notes, he states that the relationship of the *Mystery* Sonatas to the Rosary theme "is reserved, contemplative, and reflective . . . and is not to be properly understood in the sense of program music." Maier's performances are accordingly serene and spiritual, but they make up for any lack of drama with a wonderful richness of tone and sensitivity to harmonic shading.

The recordings themselves reflect the conceptual differences between the two violinists. The Newport Classics disc has clear, close, "high-impact" sound, while Deutsche Harmonia Mundi's is mellower, suggesting the more reverberant acoustics of a church. My guess is that Maier's recording will be the choice for the Baroque and sacred-music enthusiast, but that Johnson's readings will appeal to a much wider audience. I particularly urge violin aficionados to pick it up. Playing time: 106:19. *Christopher Rothko*

FAURÉ: Sonatas for Violin and Piano: No. 1, in A, Op. 13; No. 2, in E minor, Op. 108.

Mintz, Bronfman. Steven Paul, prod. Deutsche Grammophon 423 065-2 (D).

It is encouraging to see a young virtuoso like violinist Shlomo Mintz engaged in a series of chamber-music recordings when so many of his peers only seem to have time for concertos and showpieces. Though this recording of the two Fauré sonatas is not quite as successful as his recent recordings of sonatas by Franck, Ravel, Debussy, and Mendelssohn, the readings are by no means undistinguished.

Mintz brings to these accounts his full, rich tone and faultless technique, along with a precocious sensitivity to the musical argument. He gives an energetic reading of the more popular First Sonata, his own youthful dynamism complementing that of the composer. The third movement is particularly spritely, with fine interplay between Mintz and pianist Yefim Bronfman. Yet for all the excitement and expertise, there is an element missing. Clichéd though the criticism may be, these readings are simply not very French; they lack the mysterious, dreamy quality that is so important to the idiom. This is most no-

(Continued on page 68)

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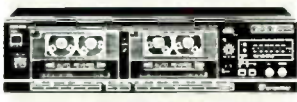
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(Continued from page 65)

ticeably felt in the difficult Second Sonata, where Mintz is suave but not always convincing. To be sure, he finds much beauty here, but his playing tends to wander, and he never fully comes to grips with the architecture of this emotionally ambiguous piece. In Mintz's defense, few violinists have conquered the sonata, and his performance of it is certainly enjoyable and currently unchallenged on disc.

In both works, Mintz is greatly aided by the assertive Bronfman, who plays as a real equal (occasionally a bit *too* equal, to the detriment of good balance) and matches the violinist's considerable energy. The sound quality is good, particularly the life-like piano tone, but it does not match the standard set in previous Mintz recordings. Playing time: 51:49. *Christopher Rothko*

HINDEMITH: When Lilacs Last in the Door-yard Bloom'd.

DeGaetani, Stone; Atlanta Symphony Orchestra and Chorus, Shaw. Robert Woods, prod. Telarc CD 80132 (D).

It took me two months to realize the full extent to which this masterpiece, based on Whitman's poem and commemorating the millions slaughtered in World War II, has taproots not only in this country but in Paul Hindemith's native Germany. Robert Shaw commissioned it for his Collegiate Chorale in New York, but the choice of Hindemith as composer was suggested by Shaw's German-born teacher, Julius Herford. At its unforgettable world premiere in 1946, I sat in the audience, moved as profoundly as everyone else, and paused over the work's unusual subtitle, *A Requiem for Those We Love*. But not until a decade later, when I heard Hindemith himself conduct it with the Berlin Philharmonic, did the full impact of that subtitle surprise me. In 1946, few people in the United States had any sympathy for Germany or Germans, and Hindemith himself had every reason to hate the Nazis. Inevitably, though, he had lost many people dear to him in the country he had forsaken for this one. For him, surely, "Those We Love" meant many more Germans than Americans. Little wonder that his poignant situation produced such a devastating work.

Shaw and the Atlanta forces he has developed give this work a performance for the ages, a monument to what Shaw has done for American choral singing in general and, in particular, to his incalculable contribution to Atlanta during the 21 years he served as music director of its orchestra. The orchestra plays magnificently, and the chorus sings as only a Shaw-trained chorus can. William Stone, who sings the part entrusted at the world premiere to an unknown named George Burnson (who later became rather better

known as George London), has an unusually beautiful voice and pellucid diction to turn most singers properly green with envy. Jan DeGaetani, in pitiless contrast, mushmouths far too many of Whitman's beautiful words, but she does sing with all her customary artistry and tonal beauty.

This recording, which is this year's Grammy winner for nonoperatic choral performance, forcefully reminds us of how great our debt is to Robert Shaw. Playing time: 62:27. *Paul Moor*

MAHLER: Symphony No. 3, in D minor*; Kindertotenlieder.

Baltsa; Vienna Boys' Choir, Vienna State Opera Women's Chorus*, Vienna Philharmonic, Maazel. Steven Epstein, prod. CBS Masterworks M2K 42403 (D, 2).*

On many occasions, I have greatly admired Lorin Maazel's Mahler, but this is not one of them. All goes generally well here until Maazel gets to the symphony's celestial sixth and final movement, which Mahler originally subtitled "What Love Tells Me." He subsequently wrote, "I could almost call the Third's finale 'What God Tells Me,' in the sense that God can only be understood as love." In other words, to invert the famous Bible verse: Love is God. Clearly, this movement had inordinate importance for Mahler, and into it he poured some of the most glorious music he ever created. Every time I hear a performance of the Third, I regard even that colossal first movement (36:52 here) as a mere prelude to the radiant apotheosis at the end.

Regrettably, Maazel "interprets" the living daylights out of this finale, projecting far too much of his own turbulent emotions into what Mahler himself set down on paper. As a result, he pulls and pushes it all out of shape and simply ruins it, thereby ruining the whole.

In the *Kindertotenlieder*, Mahler specifically marked the first two movements "nicht schleppend" ("not dragging"). Everything is relative, but to my own way of thinking, they do drag—and not only those two movements. Also, Agnes Baltsa's Mediterranean vowels will pose a problem for anyone who takes Rückert's morose but beautiful poems seriously.

A note in extremely fine print on the CD leaflet reads: "If you believe this disc has a manufacturing defect, please call our Quality Management Department at 800-257-5858. Ext. 863." Since I did, I called—only to get an answering-service Amazon who virtually demanded my home address. She finally took my phone number and said, "It may take a while. They check in here every week or ten days." So much for customer relations. Playing time: 140:25. *Paul Moor*

MESSIAEN: Livre du Saint Sacrement.

● *Bate. Bob Auger, prod. Unicorn-Kanchana DKP CD 9067/8 (D, 2).* (Distributed by *Harmonia Mundi, U.S.A.*)

**MESSIAEN: Turangalila-symphonie*;
Quatuor pour la fin du temps†.**

● *Donohoe*, Murail*. Gawriloff†, Deinzer†, Palm†, Kontarsky†; City of Birmingham Symphony Orchestra, Rattle*.* *David R. Murray and Th. Gallia, prods. Angel EMI CDCB 47463 (D and A, 2).*

First, the good news: Olivier Messiaen's preferred organist, Jennifer Bate, has recorded his latest masterpiece for the instrument, playing it on Messiaen's own organ at Trinity Church in Paris. The *Livre du Saint Sacrement* is a magnificent cycle of 18 movements based on historical and spiritual events central to Messiaen's Roman Catholic faith. The music incorporates the composer's distinctive synthesis of plainchant, birdsong, ferocious chord clusters, and exotic, Hindu-inspired rhythms and modes, and the experience of listening to it becomes increasingly hypnotic as the work proceeds. The performance is definitive.

Now the bad news: Simon Rattle and his City of Birmingham Symphony Orchestra have produced a lackluster recording of the *Turangalila-symphonie* that, as has become typical of EMI, supercedes an earlier and better one—André Previn's with the London Symphony Orchestra. The Birmingham players lumber through the piece at rehearsal tempos, failing to impart the necessary joyful abandon to the wild fifth movement and allowing the various love songs to come a little too close to stultifying nirvana. The filler, an account of the *Quatuor pour la fin du temps*, is similarly dreary.

Esa-Pekka Salonen's CBS performance of *Turangalila* is vastly preferable to Rattle's; unfortunately, a recommendable performance of the quartet has yet to appear on CD. EMI may yet redeem itself by transferring Previn's sonically and interpretively superior rendering of *Turangalila* to CD, but don't hold your breath. Playing time: 129:07 (Unicorn-Kanchana DKP CD 9067/8). Playing time: 130:15 (Angel EMI CDCB 47463).

David Hurwitz

MOZART: Sonatas for Piano and Violin: in C, K. 296; in F, K. 376; in F, K. 377; in B flat, K. 378; in G, K. 379; in E flat, K. 380.

● *Bilson, Luca. Anne Epperson, prod. Nonesuch 79155 (D, 2).*

In performance, Mozart's violin sonatas, which might be more accurately described as piano sonatas with violin accompaniment, have a tendency to suffer from balance problems. Specifically, the ornate piano parts, when played on a modern grand, can easily drown out the violin. In

this, the second volume of their complete set of Mozart's sonatas for piano and violin, fortepianist Malcolm Bilson and violinist Sergiu Luca demonstrate that no such problems exist when these works are played on the instruments for which they were conceived. The tone of the 18th-century fortepiano decays quickly and does not obscure the violin part, while the fortepiano's bass register emerges with startling clarity.

Both Bilson and Luca sound thoroughly at home on their instruments. Bilson's articulations are pointed, and his virtuoso passages are conveyed with grace and pancha. Luca's light, breathy tone is warmed with a sparing amount of vibrato, and his bow stroke is properly detached. Within the bounds of 18th-century style, both musicians add a modicum of ornamentation in the repeats and at fermatas. Most importantly, Bilson and Luca share a unified view of the music. They avoid pedantic extremes in favor of supple phrasing and felicitous dynamic shadings, and they imbue these sonatas with a fiery spirit tempered by moments of real poetry. Playing time: 114:35. K. Robert Schwarz

TIPPETT: A Child of Our Time.

● *Armstrong, Palmer, Langridge, Shirley-Quirk; Brighton Festival Chorus, Royal Philharmonic Orchestra, Previn. Svi Raj Grubb, prod. MCA Classics MCAD 6202 (D).*

In November 1938, Herschel Grynszpan, a seventeen-year-old boy driven to desperation by Nazi persecution of his mother and other Jews, gained access to the German Embassy in Paris and shot Ernst vom

Rath, the embassy's third secretary. On November 9, an unprecedented, all-out anti-Semitic orgy ("die Kristallnacht") terrorized Germany. Storm troopers demolished Jewish-owned businesses and despoiled and torched numerous synagogues nationwide. The following September, Hitler started World War II by attacking Poland. Two days after that, Michael Tippett began summing up all those events by starting work on his oratorio *A Child of Our Time*. Its world premiere in London, in 1944, brought him his first fame.

Tippett, whose subsequent opera *The Midsummer Marriage* made clear his Jungian orientation, has called *A Child of Our Time* "indeed a Passion, not of a godman, but of a man whose god has left the light of the heavens for the dark of the collective unconscious." At the suggestion of T. S. Eliot, whom he first approached, Tippett wrote his own text, which contains allusions to the stories of Cain and Abel and of Christ. To emphasize the universality of the human condition the work portrays, Tippett interpolated five American black spirituals as the closest modern equivalent to the Lutheran chorales of Bach's time.

As you would expect from so gifted a composer, all of this has a powerful impact. Sheila Armstrong has a bit of intonation trouble with some of her top notes, and the formidably intricate and difficult choral writing presents an occasional problem. But, generally speaking, it is a powerful performance that André Previn conducts here. Playing time: 58:03.

Paul Moor

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Rock'n' Roll



WILD SEEDS: *Mud, Lies & Shame*.

© Howard Benson, prod. Passport PB 6060. Ⓜ

The Wild Seeds apply both garage-band spontaneity and pop craft to rework various roots and regional forms. What they come up with would be mainstream contemporary rock had the mainstream not lost its way.

Frontman Michael Hall and his bandmates write with an intelligence and wit that offers new twists on old archetypes, with songs like "Long Gone Train" and "Ramblin'." Similarly, on "I Have Died a Thousand Times for True Love," they update the Bo Diddley beat itself. And "I'm Sorry, I Can't Rock You All Night Long"

—with its power-chording guitar intro, classic riffing, and droll Hall delivery—says plenty about aging, changing mores, and sexual tensions and ennui in the '80s. But like the folk-rock-in-overdrive "You Will Be Married to a Jealous Man" and other songs here, "I'm Sorry" is really, in its own idiosyncratic but uncontrived way, about how godawful *frustrating* it is at every turn to live in such fragmented, amoral times (and to be able to keep your sense of humor about it, too). The capper is "If I Were a Storm," with authorship credited to all four instrumentalists—and I can see why. It builds inexorably, one piece at a time, to a thrashing climax, the two guitars burning at the end.

If there's any problem with *Mud, Lies & Shame*, it's that the band doesn't give enough solo space to second vocalist Kris McKay, a Texas belter who can also sing 'em soft and folkie-like, sort of a Janis Joplin without the rasp. Here she takes lead only on "All This Time," the closing ballad. But after an EP, *Life Is Grand (Life in Soul City)*, and an LP, *Brave, Clean & Reverent*, on hometown Austin labels (and McKay wasn't even around then), this is the Wild Seeds' first release on a big-time indie, and one hopes that McKay will get more chances next time—which surely there will be for a band that has as much to say as this one and can do so with such flair and high spirits. *John Morthland*

STRAWBS: Don't Say Goodbye.

Strawbs, prods. Virgin Canada VL 3018. (30 Park Rd., Toronto, Ont. M4W 2N4 Canada.)

First, some history. School chums David Cousins and Tony Hooper, two Britons who loved to play American folk and bluegrass, formed the Strawberry Hill Boys in 1967. Shortening their name to the Strawbs, Cousins and Hooper made six albums in the next five years, joined by an impressive supply of musicians, including singer Sandy Denny (later of Fairport Convention), keyboardist Rick Wakeman (Yes), and drummer Richard Hudson and bassist John Ford (Hudson-Ford). Hooper left in 1972, but Cousins persisted with guitarist Dave Lambert and, soon, bassist Chas Cronk, recording seven more albums. As the band moved gradually from folk to folk-rock to progressive rock, its success shifted from singles in England ("Lay Down," "Part of the Union") to albums in the States (1974's *Hero and Heroine*, 1975's *Ghosts*). Finally, after 1978's *Deadlines*, Cousins packed it in.

But not for long. Cousins and guitarist Brian Willoughby played some acoustic shows and recorded *Old School Songs*, released by PVC/Jem in 1980 and now a collector's item, with a wonderful mix of live/studio performances of Strawbs/new material. In 1983, Cousins was asked to reform the band to play at the Cambridge Folk Festival. The reunion was a success, and the Strawbs have since spent a few years touring the U.K., Europe, and Canada with a lineup of Cousins, Hooper, Hudson, Ford, Chris Parren (Hudson-Ford's keyboardist), and Willoughby (replacing Lambert, who when last heard from was teaching guitar). Eventually they made it to this country, where Ford decided to stay and was therefore replaced by Rod Demick, resulting in the lineup that recorded *Don't Say Goodbye* in England last year (with some writing help from Cronk).

Four of the nine songs here are featured in the band's current show. Unfortunately, "Let It Rain," "We Can Make It Together," and "Something for Nothing" fare poorly in the transition to LP—the last title particularly, which in concert is a tough guitar number but on vinyl is muted with keyboards. "That's When the Crying Starts," the first single, is the only familiar cut that sounds alive, primarily because of the attractiveness of its melody. Indeed, the LP is rarely helped by the band's

self-production: Acoustic guitars, once a strength, are too often inaudible, and overall the sound is flat enough to weaken even the energetic new song that opens the LP, "A Boy and His Dog."

Happily, the four remaining new tracks—the simplest tracks—are outright winners. Most surprising is the success of Hudson's "Tina Dei Fada," a very pleasant instrumental, and "Big Brother," a worthy sequel to "Part of the Union." The others are two Cousins classics of the sort that he has always been able to seemingly toss off in a short afternoon of reflection. Hooper, mostly lost in the clamor of the band's club dates, takes a rich lead vocal in the gorgeous "Evergreen," and "Beat the Retreat" features Cousins and Willoughby on healthy acoustics, Willoughby playing as crisply as he does on electric and Cousins picking softly while conjuring bygone times in a voice that has lost little of its woody allure. In such tracks, the delicate artistry of the Strawbs lives on. Wouldn't it be nice if the band's entirely out-of-print back catalog could live on, too, in the form of Compact Discs? Here's hoping.

Ken Richardson

FRANK SINATRA:

Songs for Young Lovers/Swing Easy.

Come Fly with Me.

Frank Sinatra Sings for Only the Lonely.

Come Dance with Me!

Point of No Return.

"Songs/Swing," "Fly," "Lonely": **Voyle Gilmore, prod. Capitol CDP 48470, 48469, 48471.** "Dance": **Dave Cavanaugh, prod. Capitol CDP 48468.** "Point": **Dave Cavanaugh and Voyle Gilmore, prods. Capitol CDP 48334.**

NAT "KING" COLE:

The Complete "After Midnight" Sessions.

The Very Thought of You.

Cole Sings/George Shearing Plays.

Cole Español and More, Vol. 1.

"Complete": **Capitol CDP 48328.** "Thought": **Lee Gillette, prod. Capitol CDP 48331.** "Cole/Shearing": **Lee Gillette and Tom Morgan, prods. Capitol CDP 48332.** "Español": **Capitol CDP 46469.**

Capitol's five new reissues of Frank Sinatra on Compact Disc are blessedly complete: There are no "special abridged Compact Disc versions" this time around. Indeed, all but *Songs for Young Lovers/Swing Easy* contain bonus tracks. Unfortunately, the tracks do not derive from the same sessions as the original albums onto

which they have been grafted. Though it's nice to have them on CD, it would have made more sense for Capitol to sweep them all together into a couple of anthologies, as EMI has done with the Beatles' extra material in its two CDs of *Past Masters*.

The good news is that you can simply program your CD player to ignore the extra tracks and concentrate on Sinatra at his matchless peak. The place to start is the 1958 *Frank Sinatra Sings for Only the Lonely*, the greatest album of American popular songs ever recorded. (Has there ever been a performance of *anything* as good as Sinatra's studio version of "One for My Baby"?) But the four other albums in this batch are essential Sinatra, too, and Capitol has done reasonably well, if not ideally, by all of them. The sound is satisfactory, and Pete Welding's liner notes are very good.

Capitol is also in the midst of a Nat "King" Cole reissue series on Compact Disc. The four albums under review here serve as a reminder that Cole, despite his formidable talents as a singer, was a song-plugger's dream, an exquisite balladeer with an inexplicable taste for banal novelities who thought nothing of recording lovely standards like "But Beautiful" cheek by jowl with clunkers like "Cherchez La Femme." The worst example here of this tendency is *Cole Español and More, Vol. 1*, a tinny compilation of South American ditties that should have been left to molder forever in Capitol's vaults.

The Very Thought of You, on the other hand, is an uneven but attractive ballad collection from 1958 that couples Cole's dark, grainy baritone with the lush, occa-

FORMAT KEY

- Ⓛ LP/EP
- Ⓜ Videocassette
- Ⓢ Cassette
- Ⓢ Videodisc
- Ⓛ Compact Disc

Large symbol at left margin indicates reviewed format. Small symbols following catalog number of reviewed format indicate other available formats (if any). Catalog numbers of formats other than the reviewed format are printed only if their basic numbers differ substantially from that of the reviewed format.

"In Short Order": Note that these mini-reviews provide only the reviewed format and its catalog number.

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

sionally sugary string charts of Gordon Jenkins. Even better is the 1961 *Nat "King" Cole Sings/George Shearing Plays*, an exceptionally well-balanced collection of standards in which Cole and the George Shearing Quintet are augmented by a string choir that plays simple, tasteful arrangements conceived by Shearing and scored by Ralph Carmichael.

The best CD of the lot is *The Complete "After Midnight" Sessions*, recorded in 1956 with Cole on vocals and piano, a first-rate rhythm section, and four great jazz soloists sitting in: Harry Edison on trumpet, Willie Smith on alto saxophone, Juan Tizol on valve trombone, and Stuff Smith on violin. An extraordinarily gifted jazz pianist, Cole quit playing in the '50s to concentrate on singing, and this is one of the last recordings to feature him as an instrumentalist. His deft, elegant keyboard style is a perfect foil for that unforgettably rich voice, which was a good deal lighter in texture when the King Cole Trio cut the original 78 versions of three of the tunes remade for this outstanding album, "Sweet Lorraine," "It's Only a Paper Moon," and "Route 66."

Previously unreleased material from the original sessions is added to all four CDs. As usual, the discographical information is hopelessly inadequate. (Capitol doesn't even bother to give the names of the other members of the George Shearing Quintet.) Still, it's good to see Cole's recordings reappearing on CD, and one hopes for early release of more of his best albums. (The 1956 *Love Is the Thing* has already arrived.) One also hopes that Capitol goes beyond Cole's pop recordings from the '50s and '60s to provide a decently engineered reissue of the King Cole Trio's best 78 sides, vocal and instrumental, from the '40s. A two-CD set—with at least 20 tracks on each disc—would easily make up for the horrors of two volumes of *Cole Español*. *Terry Teachout*

ROBERT PLANT: *Now and Zen*.

Tim Palmer. *Robert Plant, and Phil Johnstone*, prods. *Es Paranza 90863-1*. (Distributed by Atlantic.)

"That's got to be one of the most monotonous records I've ever heard," my wife said as "The Way I Feel" closed out Side 1 of Robert Plant's fourth solo album. My wife may not be a rock critic, but she sure knows how to nail things, and her aim is true, more or less, on *Now and Zen*.

Not quite hard rock, not quite mainstream mush, *Now and Zen* rests on a fluffy '80s cushion filled with guitars and keyboards that mostly do nothing but make the music as comfy as possible. The youngsters of Plant's new band are thoroughly professional and entirely faceless—and ultimately interchangeable with

any other pompettes you can name (the drummer especially). Plant's voice is strong but mixed down, possibly to save us from hearing all the times he reverts to *Oooooooooooooooooo-zing*. Not to mention saving us from understanding the lyrics. (The inner sleeve prints only five of the nine songs, an annoying/telling thing.) Here's a graceful line: "See the whites of their eyes—then shoot—with all the romance of the Ton-Ton Macoute." Can't blame Plant for that Dave Barrett creation, but we can blame him for the three-song *Drang* of "some kinda moaning in the heart of the storm," "some kinda



storm in the heart of the man," and "I am the pilot of the storm." Lighten up, Bobby.

My wife does think that Side 2 is better than Side 1, and so do I: "Billy's Revenge" is a fast rockabilly number, with the band at its smallest and therefore best, and "Ship of Fools" has a colorful melody. And the other side does have "Tall Cool One," with its recurring guitar scrape from "Whole Lotta Love" and the other past-life samples stuck to the end, all a gas. Past-life guitarist Jimmy Page plays fine solos on "Tall Cool One" and "Heaven Knows," the latter an admittedly catchy though very basic single.

The real problem is that *Now and Zen* is being touted as *Now and Zep*, a simultaneous coming-to-terms with the past and the present. If you want some real hard Plant, I suggest you play "Burning Down One Side" and the rest of his 1982 solo debut, *Pictures at Eleven*, where Plant, gui-

tarist Robbie Blunt, bassist Paul Martinez, and drummer Phil Collins were certainly the New Zeppelin if Zep itself was the New Yardbirds. And if you want some real modern Plant, try his third LP from three years back, *Shaken 'n' Stirred*, an apt name for a record as herky-jerky, as weird and probing, as this Plant/Blunt/Martinez concoction. But Blunt and the others are gone now, four years of excellent collaboration down the drain simply because, we are asked to believe, Plant was so impressed with a demo of "Heaven Knows" that he hired its writers on the spot. What we're given today, *Rolling Stone* asks us to comprehend, is "the biggest leap forward of Plant's solo career." A dry-ice machine couldn't belch a thicker smoke screen. *Ken Richardson*

PETER GABRIEL: *Cv*.

Various dirs. *Virgin Music Video* V 50118-3.

Cv stands for *Compilation Video*, and if any artist merits such a collection, it's Peter Gabriel, whose theatrics in the first phase of Genesis carried over to a solo career where a similar fondness for the visual has often taken the form of imaginative videoclips. So it's disappointing that this compilation isn't nearly as compelling as it could have been.



The eight clips can be grouped into four pairs. Best are the animated escapades of "Sledgehammer" and "Big Time," both directed by Stephen R. Johnson but employing completely different groups of animators. "Sledgehammer" is a treasure for anyone's library—and we finally get to see the very end of it, always chopped off by the folks at MTV. By comparison, "Big Time" may be small change, but its music has aged better, and its use of natural, live-action footage of Gabriel mixed in with the animation is refreshing after the shower of stuttery faces in "Sledgehammer."

Gabriel's earlier clips are entirely live-action concept videos. The great example here is "Shock the Monkey," with Gabriel in and out of startling makeup, the camera following him into dark corners or whirling around him on a bright city street. But its counterpart, "I Don't Remember," is a failure, taking the music from *Plays Live* instead of the abrasive original from the third studio album; the sounds of audience cheers and handclaps are ludicrously incompatible with the abstract (and overdone) footage of whitewashed humanoids. Similarly, the third pair of clips, both directed by Matt Mahurin, are good/bad examples of a type: "Mercy Street" makes fresh use of slow motion and grainy black-and-white film in its fascinating literal portrayal of the troubled life of poet Anne Sexton, but "Red Rain" offers only silhou-

ettes of Gabriel and a dancer that are as murky repetitive as the song itself.

Which leaves us with *two* versions of "Don't Give Up," both bad. The first is an uncharacteristic blunder by directors Godley and Creme; if you thought the hellzapoppin' "Brilliant Disguise" was the last word in video boredom, you ain't lived 'til you've seen Gabriel and Kate Bush clinch for five minutes in front of a solar eclipse. The second version is a little better, but the misty appearance of Bush at a corner of the screen, as if she's signing for the love-deaf, only emphasizes the impossible sunniness of the song's refrain. Faced with this duplication of material, one longs for the concept video of "Games Without Frontiers" and the recent concert clip of "Biko." Still, eight clips for \$19.95 is a good deal. Just be advised that the bargain is cheapened when four of the clips are essentially filler. *Ken Richardson*

MIKE OLDFIELD: *Islands*.

Various prods. Virgin America 90645-1.  

With his 1973 debut LP, *Tubular Bells*, twenty-year-old Britisher Mike Oldfield scored instant international acclaim. In this country, nothing he has recorded since has approached the popularity of that album, on which he played virtually every instrument. Nonetheless, Oldfield's output has been steady, and with the help of various musicians and vocalists, he has released other full-LP instrumentals (*Hergest Ridge*, *Ommadawn*), a double-album composition (*Incantations*), a live set (*Exposed*), a movie soundtrack (*The Killing Fields*), a couple of compilations (*Boxed*, *The Complete Mike Oldfield*), an album of short instrumentals (*QE2*), and records presented in a compromise format, which feature a predominantly instrumental opus backed by a side of small bits (*Platinum*, *Five Miles Out*, *Crises*). Although his most intriguing work has shown a kinship with contemporary avant-garde composers like Philip Glass and Terry Riley, Oldfield has gradually moved so far in a commercial direction that his 1984 *Discovery* consists almost entirely of wordy pop.

Islands falls in the compromise category. Side 1's "The Wind Chimes" is the kind of long piece that Oldfield has done to perfection, with interlocking musical themes repeated on a variety of exotic instruments. Here, the passages keep starting and stopping without gaining momentum or reaching a satisfying finale. The guitar work (though distinctly Oldfield) fails to spark the excitement he achieved with his quick-picking licks in the climax to *Ommadawn*, and the gibberish chants are never as catchy as those on "Taurus II" from *Five Miles Out*. The five short songs on Side 2 are sung by four vocalists,

including such notables as Bonnie Tyler and Kevin Ayers (ex-Soft Machine). Still, lyrics have never been Oldfield's forte, and none of these singers has the charm of Maggie Reilly, whose full-bodied soprano brought out the best in many of his earlier pop efforts.

Deserving or not, *Islands* could become Oldfield's most successful album in America since his first, judging from the modest radio/video play devoted to its single, "Magic Touch." But the mediocre LP's true value might be to inspire new fans to explore the musician's far superior back catalog. *Andrew Nash*



NANCI GRIFFITH: *Little Love Affairs*.

Tony Brown and Nanci Griffith, prods.   MCA 42102. 


On the cover of *Little Love Affairs*, Nanci Griffith stands wistful in a corner, dressed in what passes for a high-school girl's uniform. On the broad windowsill beside her, Southern novels, record jackets, and a teapot and cup jostle each other: a writer's setting, and a visual representation of this album's mini-novel tunes. Inside, 11 stories pinned to lush, string-filled country settings talk, sigh, even tear up over love.

Using her delicate woman-child's voice, Griffith sings most convincingly about lost and losing love. From "Anyone Can Be Somebody's Fool" to "I Knew Love" ("when it was more than just a word"), her sentiments of sadness in rounded phrases suit the beer-drunk and dreamy side of a rain-streaked Nashville night. But it's when she gives us the other

side of her tongue—a muted Texas twang, a hint of a lisp curling out as she gives vent to power and passion—that *Little Love Affairs* finds its footing. In two pointed and well-pitched songs, she ranges from the sad to the settled borders of love's territory.


"Love Wore a Halo (Back Before the War)," a capsule version of Griffith's own second novel (in progress), piles soft-focus snapshots of tiny moments and film-familiar events building to the crescendo of a cherished life. "Outbound Plane," with its sturdy chorus (featuring New Yorker Lucy Kaplansky's matched second line), spits the LP's most aggressive and knowledgeable lyric: "Don't want to be standing here/And I don't want to be talking here/And I don't really care who's to blame/'Cuz if love won't fly on its own free will/It's gonna catch that outbound plane." Though "Love Wore a Halo" focuses on the temper of love grown in the '40s and "Outbound Plane" captures the tone of love ended in the '80s, they both showcase the breadth and simplicity of Nanci Griffith's best material. *Leslie Berman*

GRATEFUL DEAD: *So Far*.

Len Dell'Amico and Jerry Garcia, dirs.  6 West Home Video SW 5701.

GRATEFUL DEAD:

Dead Ringers: The Making of the "Touch of Grey" Video and More.




Justin Kreuzmann, dir. 6 West Home  Video SW 5700.

HOWARD WALES AND JERRY GARCIA:

Hooteroll?

Alan Douglas and Doris Dynamite,  prods. Rykodisc RCD 10052.

VARIOUS ARTISTS: *Old and In the Way*.

David Grisman, prod. Rykodisc RCD  10009.  Sugar Hill SH 3746.  SHC 3746.

On first viewing, some of the visuals in *So Far* seem mildly inappropriate. By the third screening, the videocassette starts to make its own kind of sense. The fifth time around, every bit of archival ballroom-dance footage, Tibetan art montage, and computer-generated animation becomes as expected and necessary as the notes in a favorite guitar solo. Holding it all together is a seamless flow of first-rate live music by the Grateful Dead, who perform five songs, with and without an audience. During a central 12 minutes of "space" and drums (which is likely to put off all but the most open-minded of non-Deadheads), quick-cut scenes trace cosmic history from the Big Bang to the nightmare of modern civilization. Perhaps more ambitious is the overall attempt to sum up, in 55 minutes, what the Dead are all about. Somehow, it works.

For a lighter video snack: Even if you
(Continued on page 78)

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⊙ *New Note NN 1006. (Distributed by New Music Distribution Service, 500 Broadway, New York, N. Y. 10012.)*

The 29th Street Saxophone Quartet, laboring in the long shadow of the World Saxophone Quartet, shows its mettle, humor, and lighthearted swing on its third album. Led by the poignant solos of altoists Ed Jackson and former Art Blakey bandleader Robert Watson, the group romps through several originals, including Watson's contribution to the Blakey book, "Wheel Within a Wheel," and the "I Shot the Sheriff"/"Isn't She Lovely" hybrid of "Free Yourself." Baritone player Jim Hartog also provides reworkings of Thelonious Monk's "I Mean You," which becomes less jagged and more stately (à la Ellington), and Bud Powell's "Un Poco Loco," where the ensemble floats through the changes without losing any of the headlong bustle. The quartet's adoration of bop and the romantic middle ground makes for the type of bright, clean lines that sound fine on LP. *Don Palmer*

KINGDOM COME: Kingdom Come.

⊙ *Polydor 835 368-1.*

The hype machine is calling Kingdom Come the Next Big Thing in heavy metal, but all I hear is . . . Scorpions! Or Lucifer's Friend. Or any other third-rate act you can think of. Whether they're aping the guitar/vocal duels of Ritchie Blackmore and Ian Gillan or botching a rewrite of Led Zeppelin's "The Battle of Evermore," Kingdom Come are tedious players of slo-mo metal, and to hear lead squealer Lenny Wolf emote is to know the true meaning of nausea. If you're drawn to this band by the long riff of "Get It On," be aware that there's nothing half as interesting on the rest of the LP. Also be aware that Van Halen's Monsters of Rock, the multi-group summer touring extravaganza for which Kingdom Come will open, also includes . . . Scorpions! Yikes!

Ken Richardson

**ZODIAC MINDWARP AND THE LOVE
REACTION: Tattooed Beat Messiah.**

⊙ *Vertigo 832 729-1.*

"Pagan, fallible, and beautiful"—so rants Zodiac Mindwarp on the back cover of his band's U.S. debut, and I can't think of three better words to describe these British metal brutes. "Pagan" because they're

crude and sexist. "Fallible" because just about all of their songs use just about the same three chords. And "beautiful" because their guitars rock so hard that we don't have to take the first two points seriously. AC/DC plus Slade minus dumb ballads equals a crazed cartoon, where Zodiac is Snidely Whiplash with a John Kay growl. Be the first on your block to dump Kingdom Come and "defy the logic of alphabets." *Ken Richardson*

BOBBY DURHAM: Where I Grew Up.

⊙ *Hightone HT 8010.*

This is the first record by this journeyman honky-tonker from Bakersfield since his string of moderately successful singles more than 20 years ago, and a mixed bag it is. Bobby Durham is an erratic singer, so influenced by Merle Haggard that sometimes he loses his own identity. Yet his enthusiasm and his undeniable feel for the material bail him out repeatedly. And the pickers are a Who's Who of West Coast country: guitarist James Burton, steel player Jaydee Maness, pianist Glen D. Hardin, bassist Jerry Scheff, drummer Ronnie Tutt. The material comes from the same team that supplies songs to Robert Cray, a recent graduate of this label, and when it's good, it is very good: "A taxi took her to the airport/But it was me who drove her there." When this veteran has stuff like that to work with, he makes upstarts like Randy Travis and Dwight Yoakam sound hyper and contrived.

John Morthland

CHARLES MINGUS: With Orchestra.

⊙ *Denon CY 1388.*

During the last decade of his life, Charles Mingus was exploring many curious manifestations of music, including string quartets and collaborations with electronic composers. He also created an eclectic vocabulary for big bands and took it to far-off lands like Japan, where this opus was recorded in 1971. Mingus plays an excellent solo on "O.P.," but Jaki Byard's arrangement apparently left the Japanese musicians so bewildered that Mingus had to play a few codas by himself and then tell them, "Do it that way." Indeed, Toshiyuki Miyama and His New Herd are generally uninspired, especially the guitarist, who sounds particularly lost in the forefront of the mix on both "O.P." and "Portrait." Only the understated arrangement of "The Man Who Never Sleeps" makes

the translation, relying heavily on the Mingus core band: Eddie Preston's lyrical trumpet carries the melody, and reedman Bobby Jones takes a great clarinet solo. Byard's seat on the piano is ably filled by Masahiko Sato, whose dense chording and melodic solos display more chops than the rest of the big band put together. On top of all the other disappointing elements is the 32-minute playing time, less than half the Compact Disc it could have been. Somehow, that's fitting. *Hank Bordowitz*

SUN RA: A Night in East Berlin.

⊙ *Leo LR 149. (New Music Distribution.)*

Sun Ra uses his orchestra to communicate what is sometimes a loose thematic exploration of black swing and jump-band tunes—or simply a ramble through a musical berry patch, both sweet and thorny. *A Night in East Berlin*, though suffering from some ham-handed edits, does what Ra does best live: covers the spectrum. Starting with a jolting spree of horns before settling into a synthesizer solo that's tinkly, resonant, and percussive, the title track (recorded in June 1986) shows Ra leading his Cosmo Discipline Arkestra through a wobbling, eerie 38 minutes. But the real treat of the Compact Disc, aside from the horns' added presence, is the extra 24 minutes of music taped at unspecified performances. This also gives you the chance to compare two versions of the chant "Space Is the Place," one cornball stride, the other smoking organ/tenor combo. *Don Palmer*

WISHBONE ASH: Nouveau Calls.

⊙ *I.R.S. IRS 42101 (No Speak 002).*

"No Speak eats New Age for breakfast," says the literature on I.R.S.'s new offshoot for instrumental music. After listening to the first side of *Nouveau Calls*, I can only reply, "You are what you eat": Arrangements are as humdrum as No Speak's identical record jackets, where psychedelic guitars look as Windham Hilly as trees. Side 2, however, is another story: trim rock ("Something's Happening in Room 602"), effective British folk ("The Spirit Flies Free"), and enough axework to revive memories of Wishbone Ash at its best. So I'd call this a better than average reunion of the four original members, nowhere near as virtuosic as 1974's *There's the Rub* (now deleted, of course) but an encouraging display nevertheless.

Ken Richardson

(Continued from page 73)

accept the premise that the making of the Dead's first MTV-style videoclip, "Touch of Grey," warrants the making of a half-hour documentary, *Dead Ringers* might tell you more than you want to know. Obviously for fans only, this profile starts with an uneven outdoor performance of the anthemic single and ambles toward the finished clip. In between, there are amusing interviews with the band, "Touch of Grey" director Gary Gutierrez, puppeteers, and other participants.

Hooteroll? is an odd little instrumental collection that Jerry Garcia made with keyboardist Howard Wales in 1971. Now available on Compact Disc (at considerable savings over what the long-out-of-print original LP has been selling for in collectors' shops), the album consists mostly of aimless, occasionally hot, jazz-rock. Two selections have been added to the CD (one, "Evening in Marin," just a longer alternate take of "Up from the Desert"), but what makes this disc worth hearing is the beautiful, hushed noodling of "One A.M. Approach."

The live *Old and In the Way*, recorded in 1973 and first released in 1975, is a much more consistent album. This just-for-fun bluegrass supergroup features Garcia on banjo, David Grisman on mandolin, Peter Rowan on guitar, Vassar Clements on fiddle, and John Kahn on bass. All five acoustic instruments are intensified in the digital format, all ten songs are energetically performed, and a good time is guaranteed. *Andrew Nash*

sound (and CD length: 63:14). Erskine keeps the soundscape shifting—the playful ear-candy level is high here—while allowing tenorists Joe Lovano and Bob Mintzer some serious improv time. The core group is rounded out by guitarist John Abercrombie and bassist Marc Johnson, who with Erskine also form three fourths of Abercrombie's *Getting There* band. Abercrombie's stab at new trends is



ROBYN STOUTENBURG

The mod Frisell swells and coos.

less rewarding than Erskine's, with much of his bittersweet expressiveness being lost on the guitar synth—though he does manage to hit a moody, insinuating pitch on "Furs on Ice." Johnson's Bass Desires, with Erskine and guitarists John Scofield and Bill Frisell, takes a looser, eclectic approach on *Second Sight*. The players are given plenty of room to stretch, and the rock parody "Twister," the Traneish "Thrill Seekers," and Johnson's extended "Crossing the Corpus Callosum" spur the mod Frisell and the more linear Scofield to satisfying heights.

A fuller showing of Frisell's ability, especially his compositional range, is found on *Lookout for Hope*, featuring his quartet. Whether working with a memorable line like "Remedios the Beauty" or threading through the mood changes of "Little Brother Bobby," he swells and coos, sings and splats in his inimitable way. Frisell stripped down further results in the more flat out avant-garde Power Tools, with the guitarist joined by bassist Melvin Gibbs and drummer Ronald Shannon Jackson. Though there are some quiet moments on *Strange Meeting*, the tendency of the group is to build to apocalyptic climaxes—thundering, screeching fits that owe as much to rock as to jazz (things never get this hairy on ECM). If this is the new Cosa Nostra, Frisell means to be the exterminator. *Richard C. Walls*

AL COHN AND ZOOT SIMS:

From A to Z and Beyond.

Jack Lewis, prod.; Ed Michel, reissue
① prod. RCA/Bluebird 6469-2.

FREDDIE GREEN/AL COHN:

Natural Rhythm.

Jack Lewis, prod.; Ed Michel, reissue
① prod. RCA/Bluebird 6465-2.

Tenor saxophonist Al Cohn, who died this past February at the age of sixty-two, suffered the fate of being known as a player's player, a critic's choice—a cruel irony given the unaffected directness of his improvisational style, a full-toned variant on that of Lester Young, sure to please any crowd it reached.

These two Compact Discs, part of RCA's Bluebird reissue series, feature Cohn in the mid-1950s, one documenting the beginning of his long and fruitful collaboration with fellow tenor Zoot Sims, the other a meeting with veteran Count Basie guitarist Freddie Green. The Sims set, played by a sextet and a quintet and augmented by four alternate takes (bringing the running time to 54:44), is a collection of lightly swinging late-night laments and happy bounce tunes from the likes of Ralph Burns, Manny Albam, and Ernie Wilkins. The contrasting approaches of these two Lesterian tenors, though not as pronounced as in later years, is still evident: Sims is fancy, fleet, and skipping while the more earthbound Cohn tends to hold his ground and punch it out. *Natural Rhythm* combines a Green and a Cohn date (for a running time of 69:16), and in this no-nonsense swing context Cohn gets downright sexy, matched by the ebullient trumpet of Joe Newman.

Both discs have notably clean sound for '50s jazz sessions, the clarity aiding the listener in the pleasant experience of digging the departed tenor titan's knowing locutions. *Richard C. Walls*

JOE FARRELL QUARTET:

Joe Farrell Quartet.

Creed Taylor, prod. CBS Associated
① ZK 40694.

JIM HALL: Concierto.

Creed Taylor, prod. CBS Associated
① ZK 40807.

PAUL DESMOND: Pure Desmond.

Creed Taylor, prod. CBS Associated
① ZK 40806.

Throughout the '70s, CTI Records maintained a reputation for releasing quality jazz on the commercial side, with producer Creed Taylor seeing to it that his stable of star improvisers' efforts were well recorded, well packaged, and occasionally sweetened by house arranger Don Sebesky. With so much attention being paid to the bottom line, it was inevitable that much of the label's product was forgettable easy-listening goop. But given the tal-

JAZZ

PETER ERSKINE: *Transition.*

Peter Erskine, prod. Denon CY 1484.
① Passport Jazz PJ 88032. ② PJC 88032.

JOHN ABERCROMBIE: *Getting There.*

Lee Townsend, prod. ECM 1321. ② ③

MARC JOHNSON'S BASS DESIRES:

Second Sight.

① Manfred Eicher, prod. ECM 1351. ② ③

BILL FRISELL BAND: *Lookout for Hope.*

① Manfred Eicher, prod. ECM 1350. ② ③

POWER TOOLS: *Strange Meeting.*

David Breskin, prod. Antilles/New Directions 90627-1. ② ③ (Island.)

You may have noticed a lot of the same people turning up lately on recordings that have a similar agenda—sort of an incipient post-fusion Mafia. Aside from personnel, what these five dates share is a questing approach to plugged-in jazz, a willingness to discard fusion clichés and expand the language.

Starting with the commercial wing, we have Peter Erskine's *Transition*, both a hot seller and a conscientious exploiter of the possibilities of synths and state-of-the-art

ent involved, some of it had to be first-rate jazz—as we are reminded by these three selections from CBS's current reissues of CTI on Compact Disc.

The earliest of these recordings, reedman Joe Farrell's debut as a leader from 1970, is a short (34-minute) but variegated set in the wide-open style of early fusion, recalling an era of expectation and exultation. Though Farrell was a utilitarian player, he responds to free and postbop imperatives with conviction; the session is both ruder (owing to guitarist John McLaughlin's two hard-edged and wailing appearances) and looser (thanks to pianist Chick Corea and drummer Jack DeJohnette's sense of avant-garde fun) than the fusion genre would soon become. A period piece in the positive sense.

Jim Hall's 1975 sextet recording is a more subdued, traditional outing. Swinging and elegant as always, the guitarist is joined on most cuts by alto saxophonist Paul Desmond and trumpeter Chet Baker, the latter displaying an uncustomarily assured and full-bodied tone. The album's set piece is the 20-minute title track, less operatic than the definitive Miles Davis *Sketches of Spain* version, more lightly melancholy. The clean CD sound heightens the impact of Ron Carter's felicitous bass contributions.

Desmond's "dry martini" sound, sparsely featured on the Hall disc, is fully displayed on 1974's *Pure Desmond*. Away from the rambunctious foil of Dave Brubeck, Desmond's airy wit could become monotonous, but here he has a proper complement in guitarist Ed Bickert, a player reminiscent of Hall but with a pluckier attack. As with *Concierto*, the emphasis is on subtle, pulsating swing lushly recorded. Both discs offer two CD-only tracks.

Richard C. Walls

HILTON RUIZ: *El Camino (The Road)*.

© Ed Michel, prod. Novus 3024-1. Ⓜ Pianist Hilton Ruiz, a thirty-five-year-old New York City native with a strong sense of heritage, always has been able to honestly explore and seamlessly balance his Latin roots and the Afro-American jazz traditions. Whatever the context—large ensemble or small, live performance or studio recording—Ruiz embraces and incorporates all: Machito, Chano Pozo, and Tito Puente as well as Charlie Parker, John Coltrane, and the most accomplished post-1970 modernists. In the past decade-plus, Ruiz has proved he's adept at making instant polyrhythmic meshes and blending everything from standards to bebop, blues to ballads, frequently employing a tasteful bevy of percussionists. Along

the way, he has managed to create his own joyous character.

On *El Camino (The Road)*, Ruiz continues his travels, though overall his advances are not as great as those of past efforts, particularly his other Novus album, *Something Grand*, and its 1985 Stash predecessor, *Cross Currents*, where the amalgam is at its absolute best in, for example, Oliver Nelson's "Stolen Moments." The new album isn't as consistently laid out as other Ruiz dates and occasionally slips into heretofore nonexistent meandering. Ruiz's near-15-minute "Eastern Vibrations"—so exact, delightful, and promising at the outset—becomes muddled and loses purpose midway. The liner notes call it "free Latin jazz," but it fails to shine.

This is not to say that *El Camino* isn't worthwhile—far from it. The more listenings afforded, the better the session's subtleties seep through. Ruiz's rolls and runs grab intermittent attention, particularly his solos on trombonist Dick Griffin's two contributions, "Come Dance with Me" and "Sometimes I." And Ruiz is joined by the strong voices of reed and flute man Sam Rivers, whose "inside" tenor soars throughout; versatile trumpeter Lew Soloff; and the most pleasant surprise, guitarist Rodney Jones, whose tone never falters.

Jonathan W. Poses

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C U R R E N T S

(Continued from page 14)

Tandy's Outlook

Many of us think of Radio Shack as the place to go for electronic parts and accessories that seemingly can be found nowhere else. In the past few years, however, the nation's largest electronics retailer has been offering a growing range of high-tech products—CD players, cellular telephones, satellite-TV systems, camcorders, and programmable remotes, to name a few. And, of course, Radio Shack also sells a ton of Tandy personal computers and software. In an interview conducted by Keith Ferrell of our sister magazine COMPUTE!, Tandy chairman John Roach offered his insights into the company's future. (The interview appears in its entirety in an upcoming issue of COMPUTE!)

"We've got a lot of things going on," Roach said. "We're innovating over a broad range of products."

That Tandy is committed to the long-term development of new products is clear from a visit to any of the company's more than 7,000 stores. The stores are being remodeled with new displays, new products, and a new sense of the potential for entertainment and productivity technology. The renovation won't be completed overnight, nor do sales of the new products have to go through the roof immediately.

"We came out with an audio and video receiver [the AV-900] last year," Roach noted. "Now, nobody much cares about a [true] audio-video receiver—but in three or four or five years, at some point in the life of the product, people will care." Certain new products have found immediate favor. "What [customers] really like," Roach pointed out, "is the universal remote control."

New platforms are finding favor at Tandy as well. The company's announcement at the Microsoft CD-ROM conference that its stores would be carrying the Hitachi CD-ROM player (as a PC accessory) led many at the conference to feel that a consumer market for this technology may be just over the horizon. CD-ROM is a high-density, laser-read storage medium that may be suitable as a universal format for audio, video, and computer applications.

Is CD-ROM headed for the home? "Not any question about it," Roach said. "I see that type of technology in the home. And maybe in a rather significant way. My sense is that the medium is going to get more important as time goes on."

Does this mean the adaptation of computer technology to traditional home en-

tertainment centers such as TV sets and stereo systems? Is there a stereo-size market for CD-ROM or computer-based entertainment? "There probably is, but not for the products on the market today," noted Roach. "The utility has got to be increased, they've got to be significantly easier to use, and there have probably got to be cost reductions as well."

Does Tandy foresee a unit that connects with the family TV set or stereo system? "I'm not sure that's a critical element. But since the product doesn't, for all practical purposes, exist yet, I'm not sure you can say exactly what the product will be."

Naturally, Roach would like the public to think of Radio Shack as its first stop for new technology. Toward that end, the company is flirting with renaming its outlets "Technology Stores." Will the new name take the place of the familiar Radio Shack logo?

"The only thing I can say is that Radio Shack was a very high-tech name in 1920," said Roach. "In the refurbished stores, we have a dominant sign that says, 'Technology Store.'"

Sharp Shooter

Canon has entered the Super VHS camcorder market by storm with the F-1000S (about \$2,400), a full-size model using the company's f/1.4 lens with a 10:1 zoom ratio (the highest we've seen in a consumer camcorder) and a macro-focus setting. In addition to three high shutter-speed op-



tions, the F-1000S has two autofocus zones: large (for panning or following moving subjects) and small (for more precise focusing). There are a total of nine video heads—four for recording and playing back at SP speed, four for EP speed, and a flying erase head to eliminate transition glitches. Other features include the VHS indexing system and the ability to record and play back in standard VHS. Canon U.S.A., One Canon Plaza, Lake Success, N.Y. 11042.

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