

18-Bit and Beyond! A CD Player Buyer's Guide

THE WHO
ON CD-V!

HIGH FIDELITY



APRIL 1989

Inside HDTV Wide-Screen High-Resolution TV Is on Its Way

TESTED:
Sony CD-V Player,
JVC VHS VCR,
NAD Receiver,
Onkyo Tuner,
& More!



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BF



History Repeats Itself.

History shows that in 1973 the Nakamichi 1000 forever changed the destiny of the audio cassette. Against all odds the world's first true three-head cassette deck had transformed a medium designed for convenience into a serious audio recordist's dream-come-true.

And over the years the Nakamichi 1000 has come to represent a product philosophy—an example of what can be accomplished when a group of single-minded people throw out the rules and eliminate the word "compromise" from their vocabulary.

If, therefore, you're inclined to expect achievements of historical proportions in the new Nakamichi 1000 Digital Audio Recording System, you won't be alone, and you won't be disappointed.

You'll notice a profound difference the very first time you use the Nakamichi 1000 Digital Audio Recorder. Unlike other DAT recorders, the Nakamichi 1000 neither loads nor feels like a VCR. The

smooth, rapid, and quiet operation of the transport will rather remind you of the acclaimed Silent Mechanism found in Nakamichi's analog cassette decks.

That's because the unique F.A.S.T. (Fast Access Stationary Tape Guide Transport) mechanism was designed from the ground up as a digital audio tape transport. Its exclusive, patented stationary tape guides assure more precise and stable tape alignment, so digital error caused by mistracking is dramatically reduced. And articulated link arms gently bring the tape into playing position within 1.9 seconds after a cassette is inserted—two to three times faster than VCR-derived DAT mechanisms.

The four-head drum has separate record and play heads, so you can monitor off the tape while you record. And a unique half-load position fast-winds the tape at 400-times normal play speed—twice that of conventional fast wind—with less wear and tear on tape and heads.

Included with each Nakamichi 1000 recorder is the 1000r infrared wireless remote controller, which gives you full access to the deck's expansive array of advanced operating features.

The Nakamichi 1000p Digital Audio Processor establishes a new reference

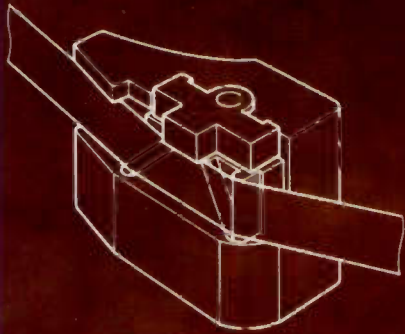
standard for sonic accuracy. 8-times oversampling digital filters and fully calibrated 20-bit digital-to-analog converters deliver unprecedented resolution, linearity, and dynamic range.



In conventional VCR-derived DAT mechanisms tape alignment guides move with the loading arms. Nakamichi's F.A.S.T. mechanism has exclusive stationary tape guides for faster alignment and superior long-term accuracy.



Nakamichi 1000 Digital Audio Recorder



Each stationary tape guide block actually consists of four separate guide surfaces—two slanted, one vertical, and one horizontal—that work together to more reliably maintain critical tape alignment.

Simply increasing the number of bits is meaningless unless they are implemented with a high degree of precision. So, the Nakamichi 1000p 20-bit D/A converter employs a novel ROM (read-only memory) calibration system. Each D/A converter IC has a corresponding ROM chip programmed at the factory with individual bit error compensation data. Together with a newly developed glitch cancellation circuit, this sophisticated calibration system brings the D/A converter to the theoretical limits of 20-bit performance.

The equally advanced analog-to-digital converter employs an ingenious charge comparison principle that assures accurate encoding without conventional, distortion-causing sample-and-hold circuits. And an extraordinary auto-calibration system precisely trims the quantization increments for all bits within 1.4 seconds every time the 1000p is turned on. That means, unlike typical designs, the 1000p's A/D converter maintains its high level of precision forever.

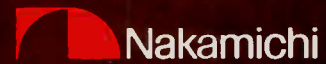
Finally, to eliminate the adverse effects of any jitter at the digital inputs, the Nakamichi 1000p incorporates a sophisticated two-speed phase-locked-loop interface that more effectively handles a wide range of time-axis fluctuations.

Perhaps most significant is the basic design of the Nakamichi 1000 Digital Audio Recording System. Not content to capture a mere, fleeting moment in audio history, Nakamichi engineers have made the system easily upgradable. The essential circuitry of both recorder and processor resides on plug-in boards, all readily accessed from the rear panels. The system thus delivers the very best performance available today...whenever "today" happens to be.

Prove it to yourself by auditioning the Nakamichi 1000 Digital Recording System. It promises to be an unusual opportunity to witness history in the making. Again.



The system's modular plug-in circuitry accommodates change and, thus, defies obsolescence.



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Nakamichi 1000p Digital Audio Processor



Nakamichi 1000r Remote Controller



COMPROMISING WITH YOUR TAPE IS LIKE COMPROMISING WITH ANY OTHER COMPONENT IN YOUR SYSTEM.

Even the most advanced system is only as good as the tape you put into it. That's why Maxell has created XLII-S.

Its unique Epitaxial formula combines gammaferric oxide and cobalt ferrite for superior response at all frequency levels. The resulting superfine particles offer unprecedented clarity and brilliance. And make XLII-S the perfect tape for recording your most demanding sources.

So match your tape to the other components in your system and use only XLII-S from Maxell. Anything less is just kid stuff.



maxell
The Tape That Delivers
Higher Performance.

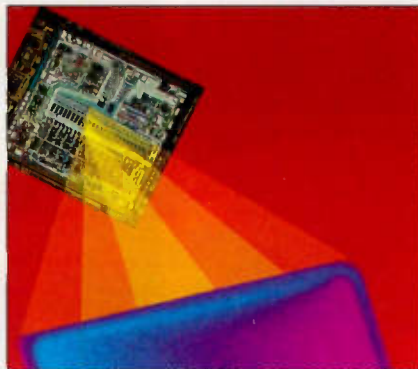
HIGH FIDELITY

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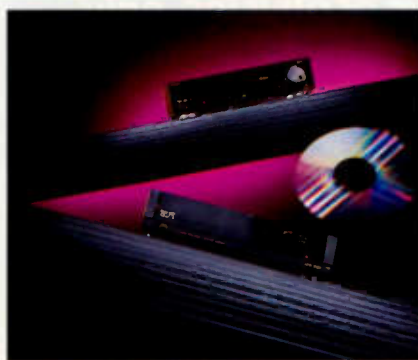
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On the cover: the Sony MDP-700 CD-V combination player (top) and the JVC HR-S5000U Super VHS Hi-Fi VCR (bottom).



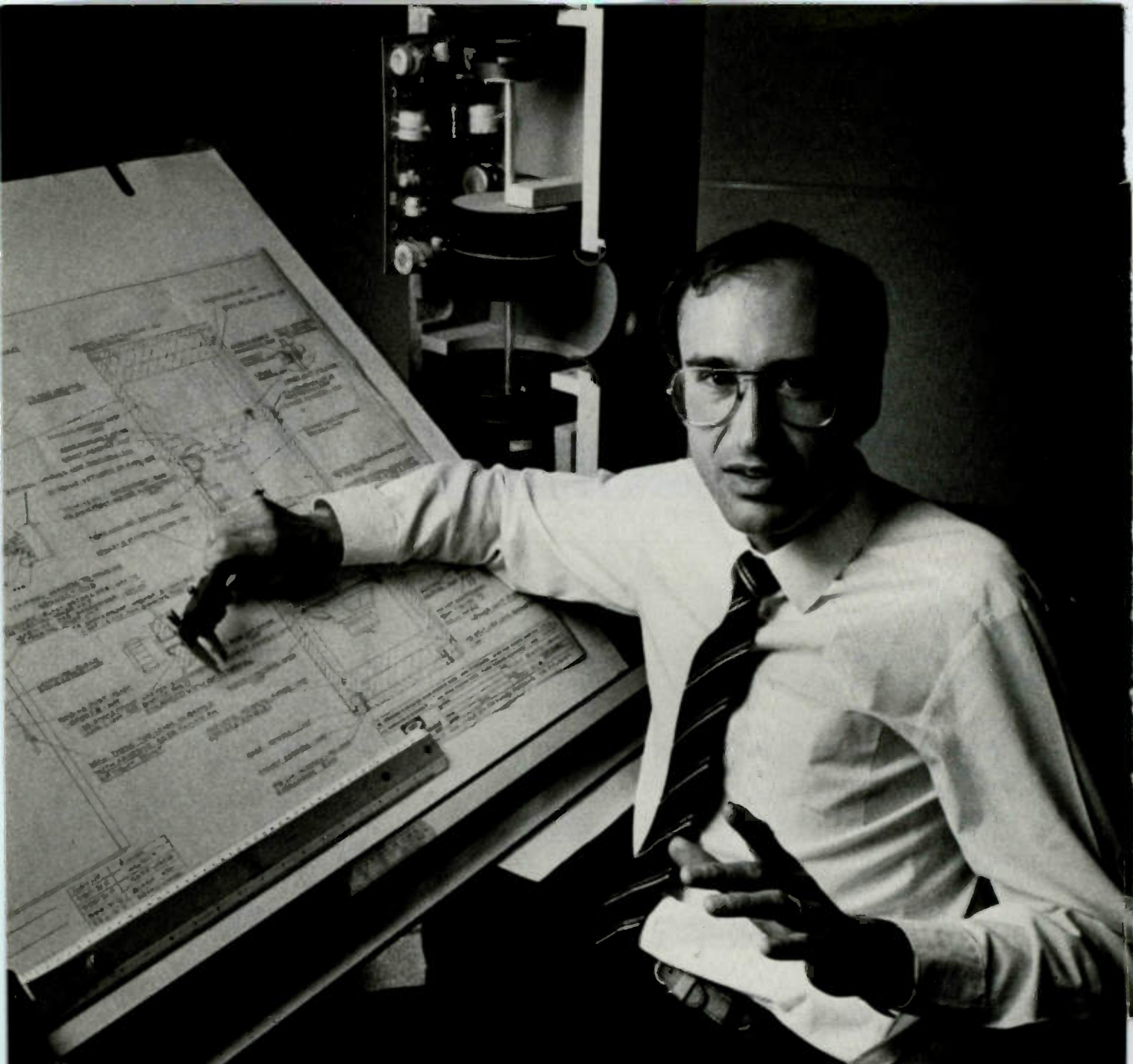
Cover design: Joanne Goodfellow
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'We can't break the laws of physics, only bend them!'

—Mike Gough, KEF CHIEF DEVELOPMENT ENGINEER

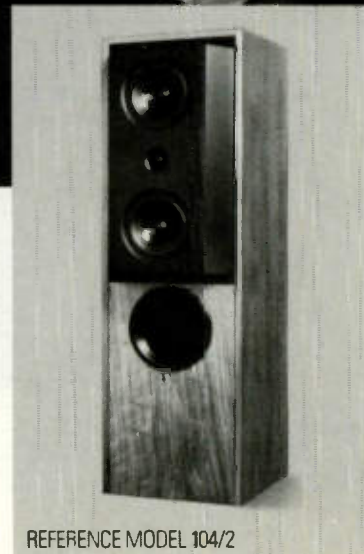
ONE STEP IN THE MAKING OF A KEF

'You can have deep bass (from a sealed box). You can have efficient bass (from a reflex enclosure). But the laws of physics say you can't have both. At KEF, we're as law-abiding as anyone. But nine years of KEF research have shown us a way around the dilemma.

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for bass loading: one damps back radiation, while the other forms an efficient resonant cavity with a tuned port. This "coupled-cavity" is the first reasonably-sized enclosure to combine outstanding bass extension with high efficiency.

'They always say it can't be done. Until someone does it.'



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
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Progress in HDTV

By Michael Riggs

A little more than a year ago, I wrote about new developments that might open the way to high-definition television (HDTV) broadcasting in the United States—primarily, NBC's Advanced Compatible Television (ACTV) system ["Front Lines," January 1988]. Events have moved with remarkable speed since then, and a great deal has changed—mostly for the better. Much work remains to be done, but after years of telling anyone who asked that it would be the turn of the century (if then) before HDTV became a reality here, I'm beginning to think that the middle of the next decade may actually be an achievable goal.

The two most important changes from a year ago have been the Federal Communications Commission's announcement of ground rules for HDTV development and the coalescence of a general sentiment that the original version of ACTV is not good enough—a sentiment the FCC's guidelines embrace. But in taking a stand for quality, the commission has placed a great burden on those who are developing HDTV transmission systems, for the FCC also endorses the primary goal of ACTV: compatibility with existing channel allocations and television sets, at least to the extent that existing receivers must be capable of pulling a standard NTSC signal out of an HDTV broadcast. It was this aim that led to ACTV's initially somewhat disappointing performance relative to full-blown wide-bandwidth HDTV systems, which look and sound great but are completely incompatible with NTSC receivers and hog at least a couple of NTSC channels' worth of broadcast spectrum.

The upshot has been a flurry of proposals for systems that purport to be capable of achieving what the FCC demands. So far, however, none of them is ready for prime time, and some are little more than a few ideas on a piece of paper.

Although some observers have criticized the FCC for requiring NTSC-compatibility and terrestrial broadcasting in the current TV bands, I think these are wise decisions. American television is unique in the world for its variety and regional diversity. In countries where the government controls all or most broadcasting, it may be practical to move to an incompatible system and direct broadcast from satellite. For them, near-term popular acceptance of the new format is not critical: They don't have to turn a profit on HDTV and can therefore afford to think only of the long-term public interest. Here, where HDTV must pay its own way (and then some) in a reasonable time, such an approach would kill the medium aborning.

But even with a system that conforms to the FCC guidelines, the problem of designing and building receivers inexpensive enough to achieve mass appeal remains daunting. The very qualities that make HDTV desirable—a wide screen and greatly increased detail and clarity of both image and sound—make manufacturing costly. The picture tubes alone are considerably more expensive to make than conventional CRTs; prices for even very basic HDTV receivers are almost certain to exceed \$1,000. Overcoming this obstacle may prove at least as difficult as clearing the fundamental technological hurdles of getting a signal on the air.

One comforting thought is that color television faced a similar economic barrier in its early days and still managed to forge on to eventual domination of the market. We can only hope that history will repeat itself. Meanwhile, there are critical decisions to be made. It is with this in mind that we have chosen to devote most of this month's special UltraVideo section to the topic of HDTV, in both its technical and political aspects. As Washington turns its attention to these issues, we encourage you to familiarize yourself with what is at stake and how the various possible choices may affect what appears on your screen in the decades to come.

SUGGESTED IMPROVEMENTS

I like HIGH FIDELITY, and it doesn't bother me that you occasionally cover video matters, even though you are basically an audio magazine. Some things do bother me, however. One is that your speaker tests consistently show response dips centered around 300 Hz, which you pass off as probably being produced by a combination of floor reflections and mike position. Since this happens so frequently, why don't you find out *exactly* what causes this measured dip? Also, though your article on Canadian loudspeakers [November 1988] interested me, it did not demonstrate what the cover says: that they are better.

My impression is that car amplifiers typically have higher output ratings than domestic amplifiers. Considering this, and the fact that the internal space of a car may be as little as a hundredth that of a living room, the possibility of hearing loss from excessive sound pressure level is enormous. Aren't the makers of car stereo equipment worried about hearing-loss lawsuits?

Finally, almost everything available now has a black faceplate. Have manufacturers done market surveys to support this consensus selection? I would like to replace some of my old equipment, but I'll wait for the reappearance of silver, gold, and bronze faces.

David J. Meraner
Scotia, N.Y.

When there is a dip at about 300 Hz (as there will be if the driver operating in that range is not near the floor and the manufacturer hasn't compensated for the effect), it almost always is caused primarily by interference from a floor reflection. We note this because the anomaly is not usually present in the direct, first-arrival radiation from the speaker and therefore is not as audible as the curves might suggest. Not all speakers exhibit such a dip, and a few have inherent response errors that accentuate it.

If you read our November cover carefully, you'll see that it doesn't say Canadian speakers are better than others—only that research is pushing them in that direction. We concede that the line could have been better worded.

The reason so many car amplifiers have such high power ratings is that the ratings are often inflated and unrealistic. On the other hand, there are some genuinely high-output car amps, and these could cause hearing damage if used improperly. As long as you don't turn the volume up too much, however, you should be okay, and we expect that would be the defense if anyone were ever to bring suit against a manufacturer for negligently contributing to someone's hearing impairment.

Some manufacturers, such as Harman Kardon, have kept silver faceplates available, and others are returning to them or providing them as an option. Decisions about such details of appearance usually are based on what dealers say sells.—Ed.

SPEAKER SEARCH

For some time, I have been looking for a pair of high-quality, high-efficiency loudspeakers weighing no more than 30 to 35 pounds each. I also would like the speakers to be suitable for both acoustic, symphonic music and electronic music. It appears that some speakers are very good for one type of music but not preferred for another. In addition, the speakers should not contain all sorts of complicated fluid or hydraulic plumbing works that may cause the woofer to work well for a while but eventually give out. Finally, I feel that too many speakers are designed only to stand upright, whereas I would prefer them to be designed so that they also could be used on their sides.

What disturbs me most is that when I go into a store, I see people buying speakers that mostly sell for less than \$500 to \$600 per pair, yet you seldom test such speakers. Too many of the speakers you review are large towers retailing for upwards of \$1,000 per pair. Even if price were not an issue, most of these speakers weigh nearly 100 pounds each and are difficult to place in a house. Why don't you test more standard-size speakers—the type I see people buying and about which more information is needed. All you review are oversized, overpriced, overweight whoppers—and some of them are quite ugly. Who cares about them?

John Kalus
Cleveland, Ohio

We don't know of any speakers containing hydraulics or plumbing. One manufacturer does describe its woofers as "fluid coupled," but the fluid in question is simply air. (Technically, both liquids and gases are fluids.) You are correct that some speakers sound good with one type of music but not another. However, a speaker that sounds natural with well-recorded acoustic music usually will be very good for other types of music as well. That is what most reputable manufacturers aim for.

You can put just about any good bookshelf speaker on its side and get decent results. However, best imaging usually is obtained when the drivers are arrayed in a vertical line.

Looking back over our last few issues, we find that two of the four speakers we tested in November 1988 are in the size and price category you consider desirable—as are both the speakers reviewed in the January 1989 issue as well as those tested in the February 1989 and March 1989 issues. We try to cover a wide range of products, which inevitably means that not all of them will be of interest to everyone.—Ed.

SOUND INVESTMENTS

If you own vibration sensitive equipment like CD players, turntables, VCR's or videodisc players you can greatly improve your systems sound quality with AQ's Sorbothane Big Feet and CD Feet. They are simply amazing in their ability to eliminate unwanted vibration.

"You can't buy more improvement for less!"

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FUZZBUSTER

I would like to take issue with a portion of a comment Terry Teachout made in his review of Angel EMI's scintillating recording of *Show Boat* [February 1989]. He states: "As usual, Von Stade's diction is fuzzy, but her singing is consistently beautiful and deeply affecting." While I am in total agreement with his description of her singing, I emphatically disagree with his generalization about the mezzo's "fuzzy diction." Indeed, if more singers possessed Miss Von Stade's "fuzzy diction," they would all be clearly understood.

Geraldine Segal
Randallstown, Md.

BEATLES AND TREES: LOOKING FOR BOOKS

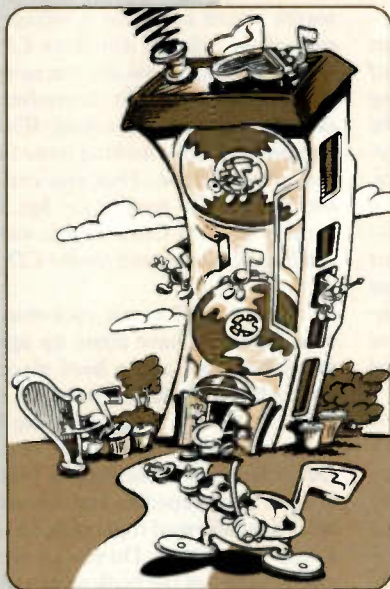
An avid Beatle fan, I recently came across your February 1988 coverage of the group's final albums on Compact Disc. In his discussion of the packaging of *Let It Be*, Hank Bordowitz writes that the original British LP version contained "an actual book of photos and studio discussions." A little more than a year ago, I bought the boxed LP set called *The Beatles Collection*, which includes all of the group's original British albums but no such book. I would like to know if the book was omitted from my copy of *The Beatles Collection* or if it simply has been discontinued.

Also in your February 1988 coverage, Ken Richardson asks in his overview, "Why not augment *Magical Mystery Tour* by reproducing the original 24-page booklet now deleted from the LP?" Is there any way I can buy this booklet?

Finally, how can I buy the small booklets in the Beatle CDs without buying the CDs themselves?

Name and address withheld

Popular Music Editor Ken Richardson replies: You are certainly not alone in your puzzlement over the Let It Be book: I would gamble that most American Beatle fans have never seen a copy, if they've heard of the book at all. Luckily, our faithful assistant editor, A. J. Segarra, has an original copy, from which we can give you and other fans some background. The title of the book is Get Back. It contains 160 pages, measures 8½ by 11, has a soft cover, and is jet black except for front-cover reproductions of the four familiar color portraits from the LP. The bulk of the book is devoted to some 250 photographs (most of them color) taken by Ethan A. Russell during the studio and rooftop sessions for Let It Be. The rest of the book prints discussions among John, Paul, George, Ringo, and Michael Lindsay-Hogg (who directed the Let It Be film), transcribed and edited by for-



TDK REAL

IS
YOUR
CLASSICAL
MUSIC
SUFFERING
FROM
POOR
HOUSING
CONDITIONS?

High resonance housing will put any tape in a nasty mood. Especially when pests, such as modulation noise, gnaw on the purity of digitally sourced music.

At TDK, we believe the formula for perfect reproduction includes not only technologically superior tape, but housing that enhances its performance.

Our incredible new SA-X, for example, features an ultra low resonance SP-ARII mechanism. By utilizing our unique co-molding technique, the unified two-layer shell realizes maximum total rigidity to improve reliability. Which drastically reduces modulation noise—an enemy of clear, pure sound that even noise reduction systems are powerless against.

This undesired "noise" is also attacked by SA-X's revolutionary magnetic characteristics and smooth, flat tape surface. First, there are the densely packed and uniformly distributed ultra fine Super Avilyn magnetic particles. Then, there is the advanced dual coating technology.

Together, the result is an unbelievably quiet tape with an exceptionally low bias noise of -61.0 dB. Plus, low and high frequency MOLS of +5.0 dB and -6.5 dB respectively.

And SA-X, which provides transparent reproduction of the most powerful digital sources, is available in convenient lengths of 46, 60 and 90 minutes.



mer Rolling Stone writers Jonathan Cott and David Dalton.

Unfortunately, this wonderful book was indeed only included in early pressings of the British *Let It Be* before quickly going out of print. Ordering a current copy of the British LP will get you nowhere, as will buying any sort of boxed set. And of course, the American LP never had anything but a gatefold distillation of the book's photos—further distilled into nothing by the current worldwide CD version. Years ago, I wrote to Mr. Dalton about the book, who in confirming its unavailability gave me the same advice that I give you now: Search record stores and bookshops that carry rare titles. I found a copy of *Get Back* at a small New York City record/book store called *It's Only Rock 'n' Roll*; it seems to be some sort of bootleg, though, as it contains only 46 pages (retaining all the text but cutting out more than half the photos) and often reproduces the photos off-color and out of focus.

Yes, the 24-page booklet from *Magical Mystery Tour*—with stills from the TV film and a comic-strip summary of its "plot"—is gone from current copies of the LP and also failed to reappear in the CD

version. Here again, your only option is to search record stores for a vintage or used copy of the original American LP. And as for the small CD booklets, you can get them only by buying the CDs themselves. But believe me, you don't need them: With one exception, they offer nothing more than what you already have. That one exception is the 28-page CD booklet for Sgt. Pepper's Lonely Hearts Club Band, well worth shelling out the money for the CD itself.

In trying to add to my rock-music reference library, I have come up against the proverbial rock and a hard place! I contacted Music Sales Corporation in an attempt to obtain a copy of Pete Frame's *Complete Rock Family Trees*, reviewed by David Browne in his March 1988 survey of rock encyclopedias and record guides, but I was informed that the book is permanently out of stock. Do you know an alternate supplier of the book or any other specific source where I might obtain a copy?

By the way, keep up the good work and the informative articles!

Gary Fadely
Indianapolis, Ind.

Out of stock, maybe, but not permanently, according to the publisher. In fact, Omnibus Press tells us that the book is currently being reprinted in England. For information on exactly when you can buy a copy either from the U.K. or in the U.S., write Omnibus Press, Contracts Dept., 8/9 Frith St., London W1V 5TZ, England, U.K.

As Mr. Browne explained in his article, *Complete Rock Family Trees* combines the formerly separate Vols. 1 and 2 of Pete Frame's fascinating charts. Omnibus Press tells us that work continues on a third volume, to be published sometime in the future to coincide with a film or TV version of Frame's family-tree concept.

Stay tuned to these pages as well: What Mr. Browne did for rock reference books, Richard C. Walls will do for jazz encyclopedias and guides in our June issue.—Ed.

THE VARIOUSLY DESCRIBABLE SAM PHILLIPS

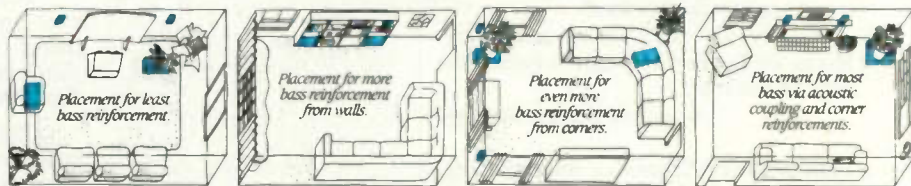
Jeff Nesin's February 1989 review of Sam Phillips's *The Indescribable Wow* contains a few inaccuracies and fallacies that need correcting.

First, as Leslie Phillips, she recorded not three albums but five. Her debut, *Be-*

"They...Play Music And Make It Sound Like Music... Unobtrusively...At A Bargain Price."

Julian Hirsch
Stereo Review, Sept. '88

Cambridge SoundWorks has created Ensemble,[™] a speaker system that can provide the sound once reserved for the best speakers under laboratory conditions. It virtually disappears in your room. And because we market it directly, Ensemble costs hundreds less than it would in stores.



You can put Ensemble's low-frequency units exactly where they should go for superb bass. You can't do this with conventional speakers because you have to be concerned about the upper frequencies coming from the same enclosures as the low ones.



Henry Kloss, creator of the dominant speaker models of the '50s (*Acoustic Research*), '60s (*KLH*), and '70s (*Advent*), brings you Ensemble, a genuinely new kind of speaker system for the '90s, available only factory direct from Cambridge SoundWorks.

The best sound comes in four small packages.

Ensemble consists of four speaker units. Two compact low-frequency speakers reproduce the deep bass, while two small satellite units reproduce the rest of the music, making it possible to reproduce just the right amount of energy in each part of the musical range without turning your listening room into a stereo showroom.

Your listening room works with Ensemble, not against it.

No matter how well a speaker performs, at home the listening room takes over. If you put a conventional speaker where the room can help

the low bass, it may hinder the upper ranges, or vice-versa.

Ensemble, on the other hand, takes advantage of your room's acoustics. The ear can't tell where bass comes from, which is why Ensemble's

What Henry Kloss tells his friends:

Every time I came out with a new speaker at AR, KLH, or Advent, my friends would ask me, "Henry, is it worth the extra money for me to trade up?" And every time I would answer, "No, what you've already got is still good enough!"

But today, with the introduction of Ensemble, I tell them, "Perhaps now is the time to give your old speakers to the children!"

L E T T E R S

yond *Saturday Night*, was released on Myrrh in 1983. The others are *Black and White in a Grey World*, *Dancing with Danger*, *Recollection*, and as Mr. Nesin mentions, *The Turning*.

Second, although Leslie Phillips never achieved the popularity of Amy Grant or Stryper, I wouldn't exactly label her "obscure," at least as far as Christian artists go. She received extensive airplay nationwide on Christian music radio stations and was featured in interviews for publications such as *Contemporary Christian Magazine* (now known as *Contemporary Christian Music Magazine*).

Third, switching from a Christian to a secular label does not necessarily mean Leslie Phillips "began to lose or break faith with the modern Christian music business," as Mr. Nesin claims. There are dozens of talented Christian artists and musicians who are also well respected in secular circles, such as the Call, T Bone Burnett, Michael Omartian, Tonio K., and Alex Acuna.

I was of course a bit surprised to see Leslie Phillips show up in a HIGH FIDELITY review as Sam Phillips. And of course

she will be bashed in Christian circles for "going secular." But I for one wish her success: She's a talented vocalist, lyricist, and songwriter, and she deserves it.

Wayne A. Pflughaupt
Katy, Texas

Jeff Nesin replies: Since Ms. Phillips tries not to mention the earlier albums, I thank Mr. Pflughaupt for the additional discographical information and, in my gratitude, won't argue the "obscurity" question. However, Sam is going out of her way to make Leslie's pre-Turning career indisputably obscure, telling *Musician magazine*: "Those are really bad records." On her unhappiness with the Christian music business, she is equally trenchant, explaining to the *Philadelphia Inquirer*: "I guess you could say that I was disillusioned and disgusted by the whole born-again thing."

From the information given in your review of Sam Phillips's *The Indescribable Wow*, local record stores have not been able to order the LP for me. Please advise.

Abram D. Londa
Elizabeth, N.J.

The difficulty your local record stores are having is a little surprising: The review does give the LP's label and catalog number as Virgin America 90919-1, and by now Virgin America has become a prominent record company (distributed by the major label Atlantic). Still, your stores can contact Virgin America at 30 W. 21st St., New York, N.Y. 10010, or Atlantic at 75 Rockefeller Plaza, New York, N.Y. 10019.—Ed.

WHAT IS AND WHAT ISN'T METAL

In your September 1988 "Letters," a disgruntled Roger Simmermaker complains about Ken Richardson's negative comments about Scorpions in his June 1988 review of Kingdom Come. Responding to the letter, Mr. Richardson tries to outdo Mr. Simmermaker by citing various bands he likes and also mentioning some performers he thinks are unknown. My complaint, however, is with what both of you consider to be heavy metal.

Groups such as Kingdom Come, Scorpions, Queen, Rush, and others mentioned are *not* metal bands! They are rock bands. Some true heavy-metal groups are Sava-tage, Saxon, Metal Church, Queensrÿche,

bass units can be tucked out of the way—on the floor, atop bookshelves, or under furniture. The satellites can be hung directly on the wall, or placed on windowsills or shelves. No bulky speakers dominate your living space, yet Ensemble reproduces the deep bass that no mini speakers can.

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and Megadeth. Some *real* metal bands you wimps have probably never heard of are Heretic, Tank, Racer X, and Dead End.

My advice to Mr. Simmermaker is to wise up and lighten up. If you don't like someone's review, then fine, that is your right—but at the same time, it is the right of the reviewer to convey his own opinion. To both of you, however, I would say that

those of us who listen to actual metal have had enough of people reviewing wimp rock bands and labeling them metal. Mr. Richardson is correct when, as editor, he states that many critics won't review metal. The reason is simple: They don't know the *difference* between rock and metal.

Mark Halpert
Phoenix, Ariz.

I agree with everything Ken Richardson says in his reply to Roger Simmermaker's letter—until he says that Scorpions have always played weak metal. Go back to the band's 1976 LP *In Trance*. I wouldn't say a song like "Robot Man" is weak. Don't get me wrong: I'm not Scorpions' biggest fan. But I don't think they are all that bad.

I was impressed when Mr. Richardson touched upon the bands in his LP collection. Mr. Simmermaker, if you want better heavy-metal reviewers, tell them to start playing better heavy metal.

Me, I'm totally happy to stay stuck in the '70s.

Keep up the good work.

John Lidwell
Farmington, Ill.

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Popular Music Editor Ken Richardson replies: First, isn't it great that a magazine known primarily for its coverage of audio equipment and classical music can also raise such a ruckus about heavy metal? Makes me kinda proud.

Second, this all reminds me of a TV commercial for that steak sauce: "After all, what is hamburger: chopped ham?" We could fill plenty of space trying to figure out the essence of metal. I agree with Mr. Halpert that Queen and Rush aren't the best examples of metal bands: Each has written material that is the real thing, but both have become much too poppy/progressive (what is poppy/progressive: an oxymoron?) to warrant the tag. I'm more curious about what Mr. Halpert thinks of the "others" I mentioned but he didn't: Surely all would agree that the early records of Black Sabbath, UFO, and Montrose are metal (then again, I like to think of the latter two as hard rock—but geez, that's another story, isn't it?).

Remember, folks, this discussion began when a reader called us on the carpet for categorizing Kingdom Come as "pop" (as opposed to "jazz," for if Kingdom Come is jazz, then God help us). But categorize we must, and so both Kingdom Come and Scorpions, however they play it, play metal—as opposed to, say, soukous. After all, Mr. Halpert, what is a mere "rock band"? If we're going to call Kingdom Come and Scorpions just rock bands, then we've gotta do the same for, let's see, Bananarama, Menudo, and maybe even the Bulgarian State Radio and Television Female Vocal Choir—and heck, where the hell would that get us?

Ain't this fun?

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.

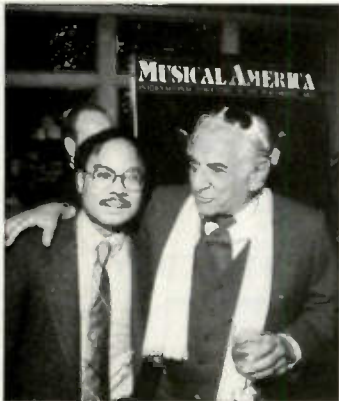
Musical America's 1989 Musician Of The Year LEONARD BERNSTEIN



The maestro makes his entrance on cue and is presented (below left) with a plaque by MA's Shirley Fleming. Well-wishers



include Kitty Carlisle Hart and ABC Publishing's President Robert G. Burton (center); HF's Ted Libbey (right); HF's David Ranada (below left);



and (at right) MA's James McCallum

He made his entrance sporting wraparound plastic sunglasses and an improbably fat red tie. Fresh from three weeks in the Florida Keys, with a fierce tan to prove it, MUSICAL AMERICA's Musician of the Year for 1989 looked more like a vacationing movie mogul than Leonard Bernstein... but there was no mistaking the gravelly voice, the puckish wit, the exhilarating seat-of-the-pants oratory. For MUSICAL AMERICA—HF's sister magazine, now in its 89th year—things had come full circle: In 1960, Bernstein appeared on the cover of MA's first annual directory. This time, with Lenny having recently turned 70, there was more reason than ever for him to be there. Upwards of 200 guests attended the January fête at Tavern on the Green. The notables included Kitty Carlisle Hart, chairman of New York State's Council on the Arts, and representatives of major artist managements and classical record labels.



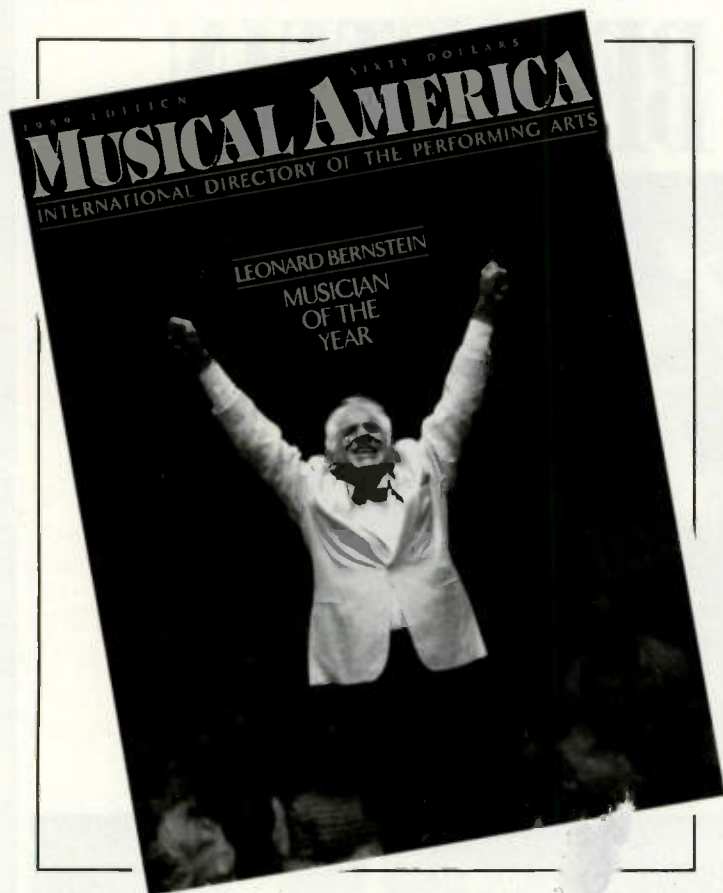
and writer Herbert Kupferberg.

PHOTOGRAPHY BY HENRY GROSSMAN

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Proton's 31-inch stereo monitor/receiver with Apex Aural Exciter

The Big Get Bigger

Proton's largest stereo monitor/receiver to date is the VT-331 (\$2,499), a 31-inch unit said to offer 600 lines of horizontal resolution from a composite-video input. The remote-controlled monitor is S-VHS compatible and features on-screen programming and a three-stage white-level adjustment control to aid in fine-tuning. More significantly, the VT-331 is the first monitor/receiver from Proton to incorporate the Apex Aural Exciter, which is claimed to improve clarity and presence in the audio outputs.

The VT-331 also has a 10-watt-per-channel stereo amplifier, an MTS/SAP decoder, and 4 by 6 stereo speakers. Additionally, Proton put in its Distortion Noise Reduction and an expander feature that, it says, makes the stereo image seem larger. Manual and automatic fine-tuning, as well as separate bass, treble, and balance controls are included. The TV tuner has last-channel recall, a sleep timer, and 180-channel reception compatibility. Other features include a comb filter, dual regulated power supplies, black-level compensation, automatic brightness and contrast, and high DC restoration (over 95 percent). Overscan is limited to 5 percent. There are separate IF stages for audio and video signals and three pairs of built-in audio-video inputs and outputs, including a set of inputs on the front panel. *Proton Corp., 5630 Cerritos Ave., Cypress, Calif. 90630.*

Because It's There

Some climb Everest, others thrill to the challenge of crafting a bearing tonearm, such as the Graham Model 1 (\$1,776). Graham's precision unit features interchangeable arm wands (\$287 for additional wands) that use a special Bendix aerospace connector. This design allows a phono cartridge to be pre-mounted in a wand via a precision-alignment fixture, for instant cartridge changes. The Model 1 also has arm-tube damping, which Graham achieves by using concentric tubes of aluminum and stainless steel with energy-absorbing damping bands separating the inner and outer tubes. Energy caused by vibration is largely absorbed and dissipated as heat, rather than being funneled back into the turntable subchassis. The arm's

unipivot design uses a precision tungsten-carbide matched bearing set to make friction lower, according to Graham, than in any other pivoted tonearm. Silicone fluid in the pivot well provides controlled damping in both the horizontal and vertical planes, and further dissipates any residual vibrations. Other features include micrometer adjustments for overhang, azimuth, VTA, and tracking force; all adjustments either self-lock or have an additional locking feature, and will not vary with use. The Model 1 is finished in black anodized aluminum and 24-karat gold plate over brass. *Graham Engineering, 1 Baron Park-33, Burlington, Mass. 01803.*

Five from Sherwood

Adding to its car stereo lineup, Sherwood has introduced five digital cassette/receivers. Two DIN-sized units, the top-of-the-line XR-2704 (\$349) and the XR-2304 (\$199) put out 20 watts per channel into two channels or 6 watts per channel into four channels. Basic receiver features for both are 30 preset stations, automatic memory and scan, station seek, local/distant and mono/stereo switches, and a power-antenna wire. The tape decks have auto-reverse, a metal-tape switch, automatic loudness compensation, and fader. Extra functions on the more deluxe XR-2704 include an FM noise canceler, full-logic auto-reverse, key-off eject, automatic music search, Dolby B and C, a front panel CD input jack, 9-volt supply connector, preamp in/out jacks, and a line-out jack.

Sherwood's XR-2207 (\$119) has 18 preset stations (12 FM/6 AM) with automatic memory and scan, station seek up/down, automatic local/distance and mono/stereo, a power-antenna activator wire, and a clock. The tape deck has auto-stop and a metal-tape switch. Bass and treble controls and a fader are also on the 6-watt-per-channel unit. For more features



Top-of-the-line from Sherwood: the XR-2704 car cassette/receiver

and power, Sherwood offers the XR-2307 (\$179) and XR-2507 (\$239). The XR-2307 has 30 preset stations (18 FM/12 AM) and an auto-reverse tape section with automatic loudness compensation and line out. The XR-2507 has a built-in amp, capable of pushing out 20 watts per channel into two channels or 6 watts per channel into four channels. Dolby B noise reduction, automatic music search, key-off cassette release, and automatic loudness compensation are featured in the XR-2507's cassette deck. *Sherwood, 13845 Artesia Blvd., Cerritos, Calif. 90701.*

Super Super Super

Even if you don't have the latest in TV technology, Magnavox's new CVJ350 S-VHS camcorder (\$1,799) will give you an improved picture through a conventional television. If you are fortunate enough to already have a high-resolution S-input monitor and S-VHS videocassette recorder, or use the camcorder to play back your video shootings, the CVJ350 will give you nearly 400 lines of resolution. (The camcorder is compatible with standard VHS tapes, but S-VHS tapes must be used for maximum-resolution recording.)

Editing while shooting and clean transitions between edited segments are made possible by the CVJ350's four-head video recording and playback system and flying erase head. A three-position high-speed shutter of $\frac{1}{250}$, $\frac{1}{500}$, and $\frac{1}{1000}$ second lets you record high-speed action without



Joining Magnavox's Super VHS camcorder lineup is the new CVJ350.

blurring; the VHS index search and address search make it easier to find your way to various parts of the tape. Other features include a monitor loudspeaker with volume control, a diopter control that allows adjustment of the viewfinder to your vision, f1.4 lens with 8X power zoom and macro capability, infrared auto-focus, $\frac{1}{2}$ -inch CCD imager, a claimed 7-lux low-light capability, 3X forward/reverse search, still frame, and audio as well as video dubbing. The CVJ350 camcorder from Magnavox (a Philips Consumer Electronics brand) weighs in at 5.3 pounds

without battery, 6.7 pounds with battery. *Philips Consumer Electronics, P.O. Box 14810, Knoxville, Tenn. 37914-180.*

System Remote

Onkyo, the first audio manufacturer to introduce a programmable remote control to the U.S. market, has released its third-generation "Unifier," the \$100 RC-AV20. Featuring simplified operation and smaller size compared to Onkyo's previous models, the keypad of the RC-AV20 allows control of as many as ten different products. Each of the 51 fully programmable keys can learn two commands, depending on the setting of the master audio/video switch, for a total of 102 different codes. *Onkyo, 200 Williams Dr., Ramsey, N.J. 07446.*

Remote Preamp

Infrared Remote Integrated System, or IRIS for short, is Hafler's new preamp, priced at \$800 with remote installed and \$650 without. If you buy an IRIS without remote and later change your mind, you can buy a user-retrofitable one for \$200. IRIS is a pure-FET, Class A design using CMOS switching and a passive cyber-optic volume/balance control for which a patent is pending. The cyber-optic design gives the traditional feel of a rotary volume control without the problems of a mechanical "pot," such as noise from dirt and dead spots from worn contacts. On the remote are a mute switch, volume and balance knobs, and selectors for any of the five line inputs, two tape inputs, and the

(Continued on page 88)

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Answers to Readers' Questions

By Larry Klein

Tone Deaf?

When playing my system, I prefer to keep the bass control almost at maximum, my midrange control one notch down from the flat setting, and my treble at maximum simply because the music sounds better to me that way. Some friends tell me that my system sounds great, others want me to reset the controls. My wife thinks I'm going deaf—perhaps because I work in an automotive body plant. How would you characterize my preferred controls settings?

*Chuck Adams
Detroit, Mich.*

Since you are probably exposed to a high level of occupational noise and do not mention wearing hearing protection, it may be that you are suffering from some degree of job-related hearing loss. More likely, however, is that your chosen control settings reflect your sonic tastes rather than a problem with your hearing (which, in any case, should be both protected on the job and regularly checked).

Unlike many critical listeners, I want tone controls (preferably in the form of an equalizer) in my systems simply because recordings, audio equipment, and listening rooms are far from perfect. I use the controls to "touch up" the sound to bring it closer to my notion of "live" music. It would seem, though, that unless your speakers or listening room are truly deficient, you are carrying your tonal adjustments to an extreme, far beyond any corrections that your system should need. The resulting sound is unlikely to resemble live music or what the recording engineers and producers intended. In short, your settings in no way conform to any accepted definition of high fidelity. But since you make no claim to fidelity (and your system sounds better to you that way), I really can't argue with you.

Audio Education

I've been intensely interested in music recording and audio technology ever since my early teens. At this point, I am seriously considering going into the audio field on some sort of professional basis. Where can I get information as to my options, the educational requirements, and so forth?

*Ted Masters
Norwalk, Conn.*

You are in luck. A definitive, 40-page guide to audio-education opportunities was recently published by the Education Committee of the Audio Engineering Society. The directory section covers courses ranging from seminars to four-year graduate programs that grant degrees. It lists institutions, facilities, courses, degrees, and tuitions in a convenient format. Also listed are the special instructional emphases and any previous educational requirements.

As a bonus, the guide contains two helpful articles that

discuss the variety of job opportunities within the field and ways to approach the audio-education process. The *Directory of Educational Programs* costs \$5 for AES members, \$6 for nonmembers postpaid. Send your check to Audio Engineering Society, 60 East 42nd St., Room 2520-HF, New York, N.Y. 10165-0075. While you are writing, you might also inquire about AES membership, as there are special rates for students.

Solid Status

The term "solid state" was used frequently at one time to distinguish audio components using transistors from those using tubes. Exactly what is "unsolid" about tubes?

*Charles Michelson
Tacoma, Wash.*

Tubes are considered "unsolid" because there is a vacuum (or very rarefied gas) inside them. In a transistor, the signal travels through a solid semiconductor material. "Semiconductor" refers to the fact that the active "ingredients" in a transistor are neither insulators nor good conductors (like metals) but can have the properties of either, depending on the circuit conditions.

Tape and Hum Fields

Because of the crowded conditions in my installation, I have to store my tapes quite close to my tape deck. And my wife frequently leaves videocassettes lying on top of our VCR. Can the electromagnetic fields from the motors in these machines harm the recordings?

*Richard Ku
Ojai, Calif.*

Certainly a strong varying magnetic field can completely erase a tape—that's how erase heads and bulk erasers work—and weaker fields can cause partial erasure, noise, and print-through. But it's safe to say that the designers of magnetic recorders have done everything possible to prevent tape erasure due to proximity to their machines.

In general, the risk you run depends on the specific design and locations of the power transformers (more than the motors) found in almost all AC-powered components. A toroidal power transformer, for example, creates much less of an external electromagnetic field than a conventional transformer. Although I would avoid storing tapes right next to amplifier power transformers, you can take comfort from the fact that doubling the distance between the source of a magnetic field and your tapes reduces the impinging field to one-fourth its strength; a couple of feet should more than suffice for safety.

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



Polk's SDA Mobile Monitors

By Beth C. Fishkind

In most home situations you can usually finagle a large enough space between your speakers for adequate stereo separation and imaging. But in a car, all you've got is the distance from the left door to the right—and whatever's between the front and rear windshields. Within this little traveling box, your music can seem cramped and unrealistic, such as a guitar playing *in* your door speaker, or trumpets blaring at the *back* of your head: not too natural in spatial proportion, relative to how instrumental sounds would reach you at a live concert, or even in a home setup, where the speakers are in front of you, placed at least six feet apart for proper imaging.

Polk's SDA Mobile Monitor loudspeaker systems attempt to solve these problems by electronically pushing the soundstage beyond the automobile's windows and keeping the music in front of you, as in a concert hall or club. The key is the company's proprietary Stereo Dimensional Array technology, or SDA for short.

SDA was originally developed by Baltimore-based Polk in 1982 and debuted in the company's home loudspeakers, where it is still available in five different models. The springboard for the SDA idea is that stereo is essentially a psychoacoustic phenomenon. Just as your eyes can be fooled watching a motion picture—which is really a series of still shots rolled through a projector at a certain speed—your ears succumb to the illusion of stereo sound, such as when vocals seem to be coming from a spot in between your two speakers. It's all happening between your ears.

The problem with conventional speakers is that both ears can hear both the left and the right channels at the same time. What happens is that the left speaker's sound hits both the left ear and the right ear; vice versa with the right speaker's sound. This phenomenon, known as "interaural crosstalk," kills true stereo separation and, according to Polk, makes the music lack a sense of spaciousness and sonic realism. Aside from SDA, Polk says you can prevent crosstalk by building a wall between your speakers right up to your nose, so that each of your ears would hear only the speaker on one side of the wall. But if you're not handy with hammer and nails, Polk's SDA system acoustically cancels the crosstalk. In practice, each SDA speaker reproduces a signal that is the exact opposite of the unwanted crosstalk signal. This special signal reaches your ear at precisely the same time as the unwanted crosstalk signal and cancels it out, leaving the one correct stereo channel delivered to each ear.

To get Polk's SDA system up and running in your car, you need a minimum of four speakers (two front, two rear) and your tuner/cassette/amplifier system has to be fed through the passive SDA matrix/crossover module (\$249). The SDA module can handle up to three 250-watt-per-channel amps, and there are three pairs of

speaker outputs: two front stereo speakers, two rear "dimensional" speakers, and stereo subwoofers—the last fed by the SDA module's 140-Hz crossover. Polk speakers don't have to be used exclusively; nevertheless, regardless of the brand chosen, the front and rear speaker systems should have balanced frequency responses.

For best results, Polk suggests that the rear speakers be placed as far away from the primary listening position (usually the front seats) as possible. Subwoofer locations, however, aren't critical, and they can be installed under the front or rear seats because the the company claims the SDA module's crossover frequency is low enough to bypass any bass directionality. The SDA module is small: 7 inches long by 6¼ inches wide by 2 inches high. It can be installed in almost any location, preferably one that's relatively flat, stable, and protected from moisture, as long as it provides a good routing channel for your sound system's wiring.

To demonstrate how SDA sounds in a car, Polk outfitted a Mazda RX7-GSL with an SDA system that was, as one would expect from a speaker manufacturer, Speaker City. Up front were a couple of Polk's Mobile Monitor 6502 systems (\$259/pair). The MM 6502 is a three-way, two-piece set with a two-way satellite module containing a ¾-inch dome tweeter and 2¼-inch midrange driver, as well as a separate 6½-inch woofer. The satellite speakers were mounted on the Mazda's dashboard and the woofers were installed in the doors.

In the back pillars were Polk's 6½-inch, full-range coaxial MM 10a speakers (\$179/pair) and a pair of the 6-by-9-inch MM 6901 subwoofers (\$169/pair). Electronics in the system were an Alpine 7907 CD/receiver with 2X oversampling and two Soundstream D200 amps.

When I first auditioned this SDA Mobile Monitor system without anything for comparison, I was merely impressed by the overall sound quality and clarity. But I only began to appreciate the SDA difference by switching the system off and then on again. The effect is subtle and not overbearing. SDA really does add a three-dimensional quality to the music and makes the soundstage into a panorama in front of you.

Even without SDA, Polk's Mobile Monitors are excellent. I had a chance to listen to some other systems that Polk personnel had installed in their cars. The music was always well defined and balanced. Strong bass was delivered very cleanly and never disproportionately dominated the overall sound.

Chances are that if you are riding around with the speakers you got when you bought your car, you might be due for a speaker upgrade. Most head units in new cars coming through in recent years are okay, but factory-installed speakers are still generally poor. I strongly recommend auditioning Polk's Mobile Monitors, whether you opt for the SDA module or not. □



—Leonard Feather, Celebrated Jazz Critic for the L.A. Times, Washington Post News Service and Author of many books including "The Jazz Years—Earwitness to an Era."

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"Listening to recorded music, of course, falls short of the delights of listening to a live performance. I was therefore skeptical when told that BBE could make a dramatic improvement to virtually all audio systems and I had to hear for myself.

"I was amazed at how much better the BBE 1002 made my music system sound! There was a presence, a *being there* sense of excitement. The rich textures of the instrumental sounds, the subtle nuances and details in the music come through with clarity and authenticity.

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Calling the RIAA's Bluff

By Robert Long

Las Vegas is known for gambling. This past January, the Consumer Electronics Show (CES) in Las Vegas was the site of some unusual risk-taking. During the past couple of years, a number of companies have talked boldly of introducing DAT, and some actually have reached the market with car *players*. But when the chips were down, no marketable home DAT *recorders* were to be seen in the ante. This January, it was different.

In the first place, Nakamichi has joined the game—and a high roller it is. At \$10,000, the new Nakamichi 1000 DAT recorder is not what you'd call your typical home deck. But the fact that Nakamichi is making it available through its normal retail channels is crucial, because the RIAA (Recording Industry Association of America) has said it will sue any company trying to sell a DAT recorder on the U.S. consumer market.

Just how strong a deterrent the RIAA threat has been is difficult to assess. The companies that make DAT machines are still only Japanese, and, coming from a relatively nonlitigious society, they attach a much stronger stigma to being sued than do American firms. However, "professional" DAT equipment is already being sold to American amateurs, evidently with the full knowledge of the Japanese manufacturers. Maybe they already had gambled that the RIAA would not move against such sales—an action that could hamstring the recording industry as much as home recordists.

Some of the DAT decks appearing on the American market have been strictly consumer models, however—gray-market goods, as they are called, brought in by outfits that aren't "official" distributors, "factory authorized" agents, or the American arms of Japanese manufacturers. These products are those intended for a specific market that have been siphoned off to another in order to bypass some sort of importing awkwardness. This has often resulted in selling prices "below wholesale"; it also may leave the buyer without a U.S. warranty. The gray market gives the RIAA no clear target for litigation, since such importers often are opportunists who decamp in the night as soon as they're paid—or their sources of goods dry up.

At least one company is attempting to do something about the sleazy image of gray-market operations. During the recent CES, an importing company known as DAT USA International announced that it had been offering DAT to U.S. retailers for some two years without much fanfare but now plans to go into it full-tilt. Not only does the company plan large-scale advertising, but it wants every product it sells to carry a warranty. Where the manufacturer's warranty does not cover the United States—and DAT USA implies that it has sufficient blessing from some Japanese manufacturers to make their warranties stick here—the recorder will be covered by an American Warranty Co. contract.

Two considerations have admittedly induced DAT USA to come out of the gray-market closet, so to speak. One is the recent Supreme Court decision to the effect that "second sourcing"—importation via a route other than through the American subsidiary or factory-authorized agent—is legal. The other is the opinion of DAT USA's counsel that, if the RIAA does sue, the electronics industry is almost sure to win hands down. I put it that way because DAT USA expects the industry to stand by its side.

Probably it will. It's hard to imagine that (to choose one name out of the hat) Sony Corporation of America would permit products with the Sony logo to stream through U.S. Customs and into unauthorized hands unless Sony Corp. in Japan had told it to let DAT USA act as a stalking-horse to take whatever heat develops and clear the way for Sony's own future efforts. Not only would this approach prevent any litigation against Japanese companies and their American affiliates, but the RIAA probably is much less likely to bring suit against a small U.S. company than against a foreign giant, if the association wants to maintain whatever public sympathy it may still enjoy.

And then there's Nakamichi. It is not a giant among corporations, however sterling its reputation in its chosen field. Nor is it producing a deck that can, rationally, be purchased simply for the dubbing of CDs. (This is, of course, the crux of the RIAA's argument: If DAT can replicate CDs precisely, users will make perfect copies for their friends, crippling CD sales and robbing starving artists of their royalties.) It would take a powerful lot of copies to make a \$10,000 recorder and its \$12 tapes less expensive than buying the original CDs themselves. So the RIAA will look pretty silly if it sues Nakamichi. But *not* suing just because the price is too high will place the RIAA on a very slippery slope: At just what price level will the litigation tripwire be placed?

In the meantime, of course, Nakamichi will have gained the immense prestige accorded the first manufacturer to bring DAT to these shores itself. And once DAT USA has further increased the installed base of operating units with other brands, the RIAA will have a growing vested interest to fight, if it tries to take any measures against the medium—or so DAT USA gambles.

But how fast will all this happen? DAT sales have been disappointing in Japan, and a look at the machines' prices here may demonstrate why. DAT USA expects prices to come down this year. Though the minimum for its models has been around \$2,000, it believes decks can be sold for less than half that figure this spring. The irony is that the more successful DAT USA is with its current push, the faster the manufacturers will try to cut it off in favor of their own distribution channels. Therein, perhaps, lies the biggest gamble of the lot. □



A Reformation Of Video

By David Ranada

Reference Recordings' LD-101 videodisc resembles—in potential, long-term effect—Martin Luther's *Ninety-five Theses* that he nailed to that church door in Wittenberg. "Video 101," as it is nicknamed, is a basic course on video technology, but, like Luther's list, it is also a ruthless exposé of the status quo—in this case, the shoddy engineering rampant in the entire video industry. LD-101 contains video and audio test signals that Joseph Kane, Reference Recordings' video director and producer of the disc, believes are equivalent to having \$10,000 worth of video and audio lab equipment. I, however, think his figure is far too low: If you take the educational nature of the LD-101 into account, it is invaluable. Thus, for the critical viewer, this \$60 disc alone would make an investment in a videodisc player worthwhile. A partial account of the LD-101's signals reveals the disc's importance:

- Three resolution test patterns: multiburst, SMPTE Resolution Chart, and the classic Indian Head chart.
- EIA, SMPTE, and full-field color-bar patterns for setting a monitor's color and tint controls. The disc comes with a special blue-only filter that is *required* for proper use of these test patterns (rarely found at TV studios).
- Extensive test signals to aid in the proper setup of the gray scale and color balance of a monitor. Unfortunately, not only do these patterns require lab instruments, but consumer monitors don't make the necessary controls accessible to the user, if they have them at all.
- Full-field color displays for visual evaluation of color noise. These should be especially helpful for testing and comparing the performance of VCRs and videotape.
- A couple of test patterns that can be used to see the color-warping effects of "automatic flesh-tone" circuits.
- The most complete set of audio test signals yet put on a videodisc—every one of which is contained on both the disc's digital and CX-encoded analog soundtracks. All of them are also available as left-plus-right and left-minus-right signals for testing of the front, surround, and subwoofer outputs of a surround-sound decoder.
- A new "monotonicity" signal "designed to exercise all the bits in a digital audio system." It consists of a high-level, 0.5-Hz triangle wave with a superimposed 1-kHz sine wave at -60 dB. As the triangle wave moves up and down, the sine wave will eventually activate all possible bit-to-bit transitions. Filtering out the inaudible triangle wave leaves just the sine wave, and any changes in the sound of the latter will indicate non-monotonicity in the player's digital-to-analog converters.

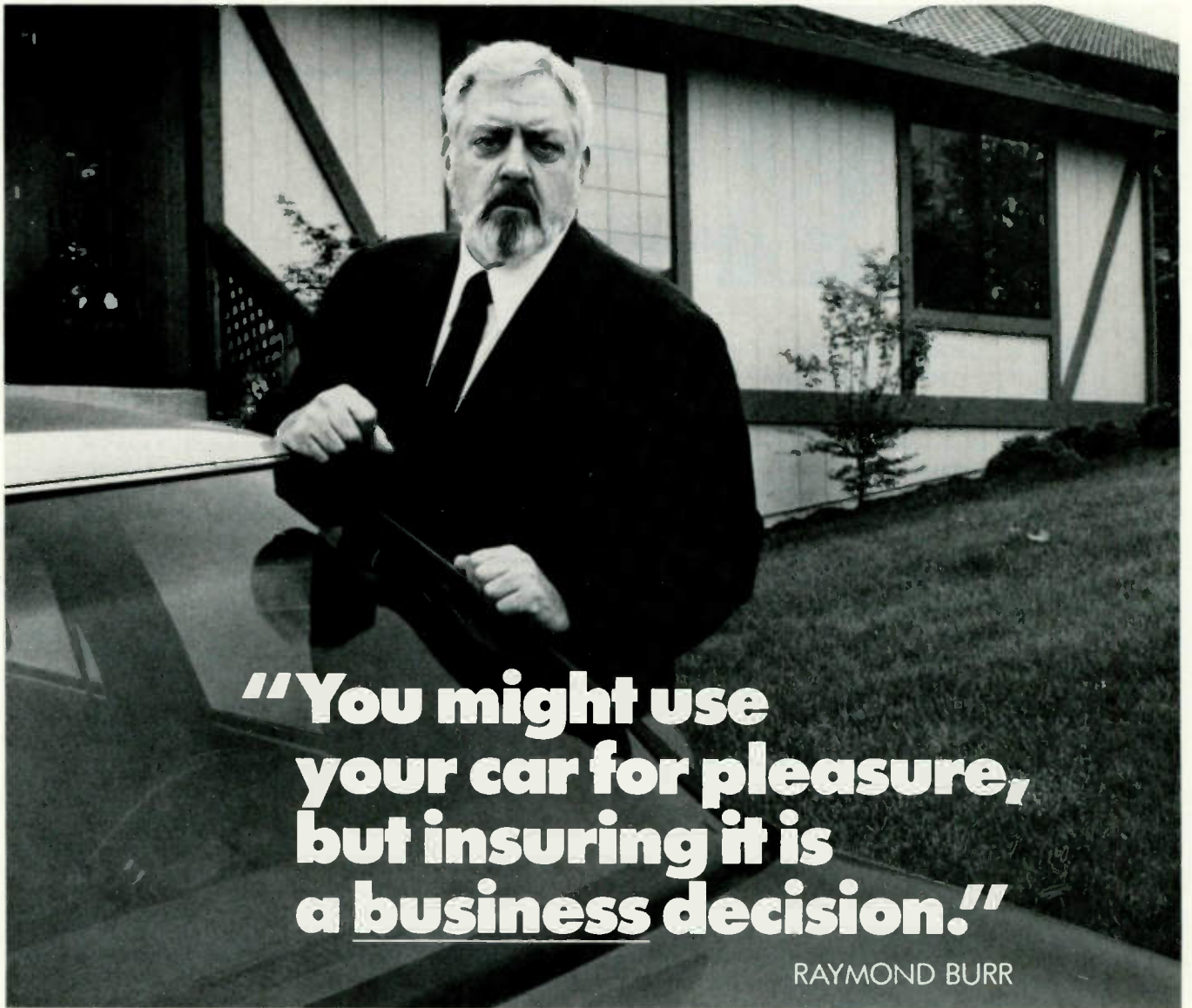
Besides all the test and reference signals, "Video 101" contains a great deal of tutorial information that should be of interest to all videophiles and especially video engineers—who, I have found, generally know as little about the theory behind their profession as so-called audio engineers know about theirs. There is a tutorial on how films

are transferred to videotape, a segment teaching you how to tell whether a film transfer was made from a negative or positive print of the movie, instructions on where to set up speakers for a surround-sound system (with suitable test and channel-identification signals), a series of still frames showing how videodiscs are mastered and duplicated, and information on basic TV studio techniques and technology (electronic field production, switching, mixing, character generation, etc.). Two spectacular segments—a raft run on the American River in northern California and a flight over the Grand Canyon—simulate the aspect ratio of upcoming HDTV systems. A series of still frames goes over the basic requirements for ideal viewing conditions (background lighting, viewing distance, etc.) and the basic characteristics of the NTSC color system—including, just to be absolutely comprehensive, the fundamental NTSC color-encoding equations. There are even test patterns meant for the evaluation of the disc's own pressing quality.

The extensive program booklet, while providing a complete guide to the disc's many audio and video test signals and visual-training segments, is also tutorial in nature. There is a complete explanation of the many picture-adjustment controls that should be available on a "professional" monitor. Videophiles reading this section will justifiably wonder what image-quality compromises home-monitor manufacturers have made in reducing the full professional complement of more than a dozen controls to just four: color, tint, brightness, and contrast.

From the booklet, we learn that "in order to have a good color picture, you must first be able to get a good black-and-white picture on a color monitor: a good gray scale." We also find out that producing a gray scale "is and always has been the difficult part of monitor calibration." The importance of this becomes apparent when you find out that "the best broadcast-grade monitors will hold a calibrated gray scale for about a month before instrumentation can detect drift" and that this drift "becomes particularly apparent when two monitors are placed side by side." When was the last time you heard of a TV dealer setting the picture controls on the goods he sells, much less readjusting them every month? Do you?

In its dual capabilities—to teach about video and to test your video and surround-sound equipment—Reference Recordings' LD-101 is, for critical viewers, easily the most important videodisc ever released. I'd even go so far as to say that it is the most significant piece of video software—tape or disc—yet produced, since it has the potential for upgrading the awareness of image quality not only among video-equipment consumers but at TV studios and video-software producers. It is both a video-signal reference standard and a challenge to the video industry that I hope will spark a reformation of video quality. Hallelujah! □



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your car for pleasure,
but insuring it is
a business decision."**

RAYMOND BURR

Here's why... With the cost of auto insurance, particularly with two or more cars, you must make informed decisions. The right insurance company with the right coverages, with the proper limits at appropriate rates. Those are *business* decisions that require the advice and counsel of an Independent Insurance Agent. We represent several fine companies...not just one...so you choose the right policy at the right price, with the right service. An Independent Agent — always a good *business* decision.



INDEPENDENT INSURANCE AGENTS OF AMERICA
...and the insurance companies they represent

INCORPORATED

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

Test Reports

Although Sony has for years manufactured videodisc players for industrial applications—training films, point-of-sale displays, etc.—the company has only recently jumped into the home videodisc market. And if the MDP-700 is any indication, that jump was with both feet: The MDP-700 is one of the new generation of do-anything units that can play, without adaptors, 3- and 5-inch CDs, 5-inch CD-V

important PICTURE MODE slide switch. This switch is intimately tied to a cluster of the player's special features that all stem from its digital video-field memory. The memory supplies the player with its ability to apply the full set of "trick" videodisc features to long-play (CLV) videodiscs as well as CD-V singles, and not only to videodiscs recorded in the "short-play" (CAV) format. With the MDP-700, these tricks include high-

Sony MDP-700 CD-V Combination Player



singles, and 8- and 12-inch videodiscs. Its long—but hidden—heritage shows in its performance, which is generally up to par with that of other models having comparable features.

The player's most essential cueing and playback controls (pause, play, stop, still frame, chapter/track skip, and the increasingly common jog-dial/shuttle-ring assembly) are located on the front panel, but most of the MDP-700's many functions are activated by its supplied infrared handset, which duplicates all the front-panel controls except for the headphone output, its volume knob, and the

speed search with the shuttle ring (up to 30 times normal speed), still frame, frame stepping (with buttons or the jog dial), and variable-speed playback at one-thirtieth, one-eighth, one-half, or three times normal. Whenever these functions are activated, the digital frame memory buffers the disc output to eliminate most instances of "noise bars" and other video disturbances.

For highest picture quality when still-framing from CAV discs during passages with little scene motion, however, the PICTURE MODE switch is best slid

(Continued on page 25)

Dimensions: 18½ by 4¾ inches (front), 15¾ inches deep, plus clearance for connections.

AC Convenience Outlets: One unswitched (400 watts max.).

Price: \$1,350.

Warranty: "Limited," three years parts and labor, except one year on laser pickup and drive parts.

Manufacturer: Sony Corp., Japan.

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

TONY PETINATO



END OF CONVERSATION.

Close your eyes, put on your favorite CD and listen. That's the best way to appreciate the natural, accurate musical reproduction of the new Elite TZ Series reference loudspeakers from Pioneer.

Designed by the same engineering team that developed Pioneer's renowned TAD studio monitors, the TZ Series speakers are designed to accommodate the extended dynamic range, superb clarity and depth of digital source materials.

Pioneer began by developing two entirely new diaphragm materials—ceramic graphite and ceramic carbon. These unique low-mass materials are used to construct midrange and high-frequency dome-type diaphragms that virtually eliminate spurious resonance while providing lightness, stiffness and excellent signal propagation speed. Now critical midrange frequencies and delicate highs will sound clearer and more natural than ever before.

To reproduce the extended low frequencies found on digital recordings, Pioneer developed a twin woofer system that packs a punch you'll feel as well as hear. Opposite-mounted bar-jointed

woofers placed in the center of the TZ's cabinet minimize standing waves while providing accurate low-frequency response to 20 Hz.

The cabinet of the 143-lb. TZ-9

is specially constructed, using 1" thick high-density board and a separate inner baffle that isolates the negative influence of low-frequency



Unique bar-jointed twin-woofer system.

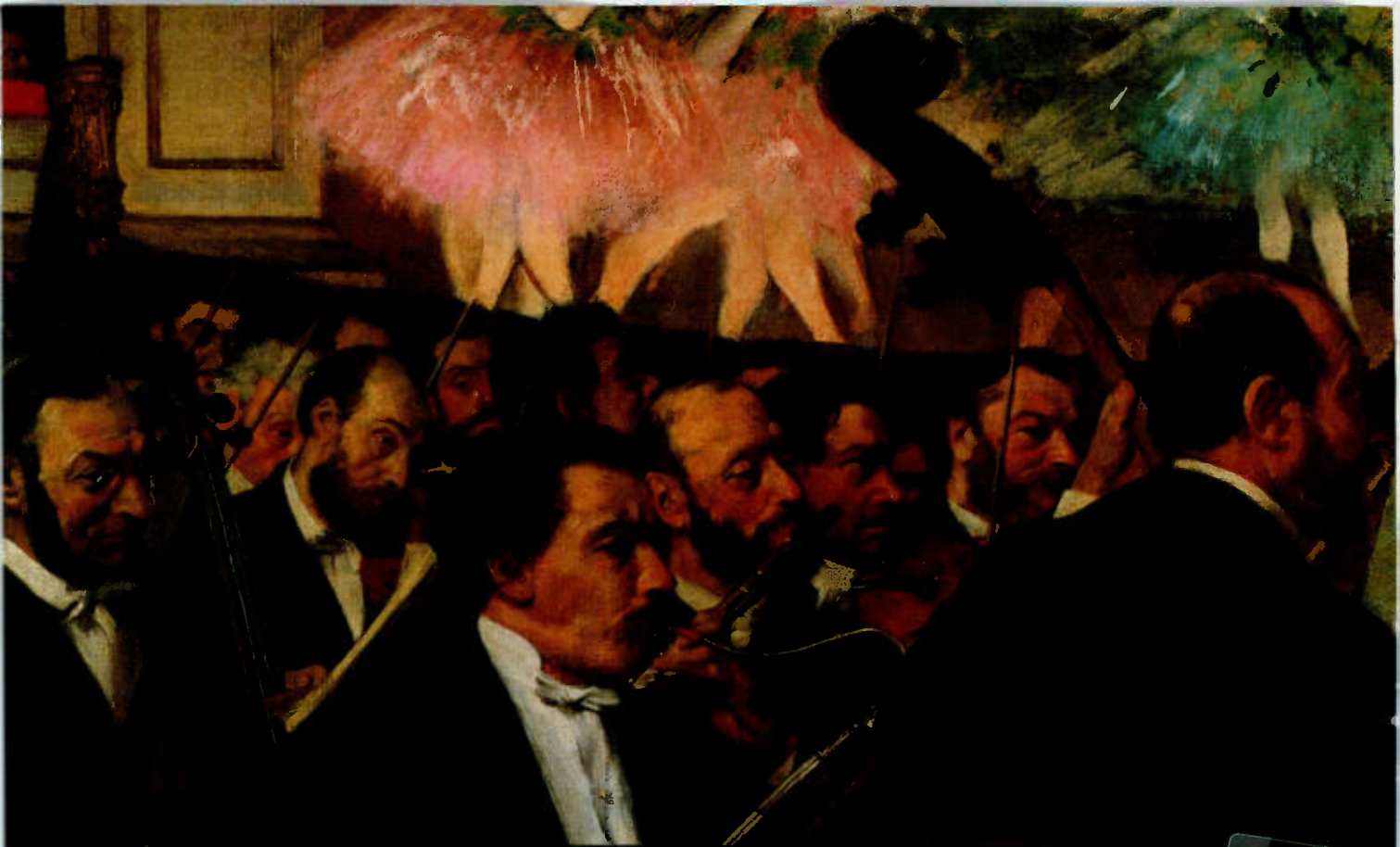
vibration. Corners are specially rounded to eliminate diffraction and drivers are arranged for optimum sound-field intensity. The result is imaging and clarity that bring performances alive with smooth, true-to-life sound.

But enough conversation. If you're interested in hearing more about Pioneer's new TZ Series speakers, call 1-800-421-1404 for a technical white paper and the Elite dealer nearest you.

And let the speakers do the talking.



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Model shown: TZ-9. Also available: TZ-7.



RZ-7000 Computerized Stereo A/V Receiver

CRAFTSMANSHIP

We put so much into our new RZ-7000 Computerized Stereo A/V Receiver, we thought it deserved a new, sleek look on the outside, too. It deserves more because it provides a better man/machine interface that makes every operation simpler and more logical. Like the station call/equalization memory system: not only can you preset stations and equalizations, you can give them four-character names for quick and easy recognition. You can even make an equalized setting part of the station preset.

And it deserves more because it has everything you need to incorporate audio and video components into a single versatile system.

Don't you think you deserve the RZ-7000?



The RZ Series of receivers consists of the RZ-7000, RZ-5000, RZ-3000 and RZ-1000.



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Telex: J28310 SANSUITK

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In Canada: VANTAGE ELECTRONICS CORP. Vancouver, Toronto

(Continued from page 21)

to its down ("Direct") position. This gives you a true, unbuffered still-frame output (the laser continually plays back the same portion of the disc) with substantially greater resolution and lower noise than when buffered by the digital video memory.

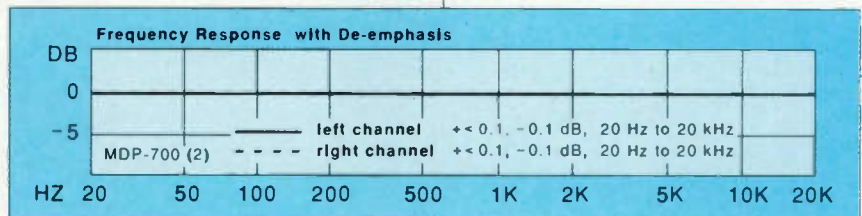
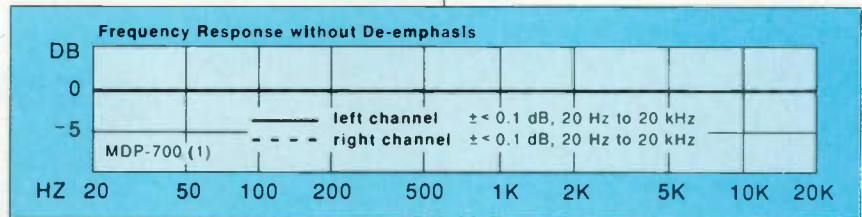
A few digital special effects of varying utility are provided. Pressing FLASH MOTION provides a series of still frames flashed on the screen at specified intervals, with normal sound playback; using STOP MOTION shows one still frame while the audio continues; PICTURE ART applies a "solarization" effect to the image that I would never use in public (it's embarrassingly '60s in its effect). Finally, pressing RECALL allows the storage of a still frame memorized during continuous playback.

As an audio-only CD player, the MDP-700 has a few attractive features. To me, the most appealing is being able to use the shuttle ring for high-speed cueing. Others may like the player's dual digital-to-analog converters (one per channel) being fed by a four-times-over-sampling digital filter. Scatterbrains will prefer the ability to play selections in a random, player-chosen order (SHUFFLE PLAY).

Videodisc and CD playback have similar programming and auto-repeat features. As many as 16 videodisc chapters or CD tracks may be programmed. Videodisc repeat modes are A-B loop, whole chapter, and whole side; CD repeat modes are A-B loop, whole track, and whole disc. Both playback modes also take advantage of the on-screen display, although the front panel display can serve as a bare-bones CD-cueing aid so that you don't have to turn on a monitor to cue up a CD. The TV display shows a great deal of information, including where you are on the disc and what playback modes have been engaged, and it also aids during the chapter/track programming. The only available automatic CD-cueing mode is by track number, although the shuttle ring helps to make up for the lack of other modes.

Hookup is extremely simple. There are two groups of stereo-audio/composite-video outputs available through pin jacks. The two sets are identical, except that one of the video outputs is always free from the on-screen display information. The other video output's information display can be suppressed with a button on the remote. When playing a videodisc, the audio outputs default to feeding the contents of the digitally encoded soundtrack—if one is on the

disc—and, if desired, they have to be deliberately switched to the analog soundtrack by using the remote control. Another button will switch in CX decoding for the small number of analog-soundtrack discs with CX-noise reduction but *without* the embedded signal telling the player to automatically switch in its CX decoder.



There is no digital-audio bitstream output as found on other recent players. But there are an F-connector RF output for feeding a TV set (video plus monaural audio on TV Channel 3 or 4) and a set of Control-S jacks that let you hook up similarly equipped Sony monitors and VCRs so that the TV's remote-control sensor will pick up and transmit control data to the attached videodisc player and VCR.

As the Diversified Science Laboratories' test data show, the video behavior of the MDP-700 is mostly first-rate. Video frequency response was down only 5% dB at the highest frequency on the test disc (4.1 MHz), implying a horizontal luminance resolution exceeding 330 lines. And indeed, visible resolution exceeded 380 lines, as viewed on a monitor displaying a resolution-wedge test pattern. The other video specs are right up there with the best, except for the higher-than-normal chroma differential gain (change in color level with brightness level). Visually, this problem was not evident on normal images, even on direct comparison with a videodisc player with measurably lower chroma differential gain. On the other hand, the Sony's color and luminance noise were very low, and visibly slightly less than the competitor's model during certain scenes. Both models' video noise levels were, in any case, far lower than can be expected from any home videotape format, including Super VHS and ED Beta. This has always been

(Continued on page 28)

Compact Disc Playback

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

Channel Separation (at 1 kHz)	101 dB
Channel Balance (at 1 kHz)	$\pm < 0.1$ dB
S/N Ratio (re 0 dB; A-weighted)	
without de-emphasis	105 dB
with de-emphasis	108 1/4 dB
Harmonic Distortion (THD+N; 40 Hz to 20 kHz)	
at 0 dB	$\leq 0.041\%$
at -24 dB	$\leq 0.048\%$
IM Distortion (70-Hz difference; 300 Hz to 20 kHz)	
0 to -20 dB	$< 0.01\%$
at -30 dB	0.020%
Linearity (at 1 kHz; dithered below -60 dB)	
-0 to -50 dB	no measurable error
at -60 dB	+0.4 dB
at -70 dB	+1.0 dB
at -80 dB	+3.1 dB
at -90 dB	+6.3 dB
at -100 dB	+7.5 dB
Tracking & Error Correction	
maximum signal-layer gap	≈ 500 μ m
maximum surface obstruction	≈ 500 μ m
simulated-fingerprint test	pass
Maximum Output Level	
line output	2.08 volts
headphone output	7.10 volts*
Output Impedance	
line output	775 ohms
headphone output	220 ohms
*Into an open circuit. Maximum output was 0.81 volt into a 50-ohm load.	
Videodisc Playback	
All data were obtained using the Pioneer M-1 and F-2 test discs.	
Audio Frequency Response	
digital	$\pm < 0.1$ dB, 20 Hz to 20 kHz
AFM (CX off)	+0, -3 dB, ≈ 70 Hz to ≈ 19 kHz
Channel Separation (at 1 kHz)	
digital	101 1/4 dB
AFM	64 dB

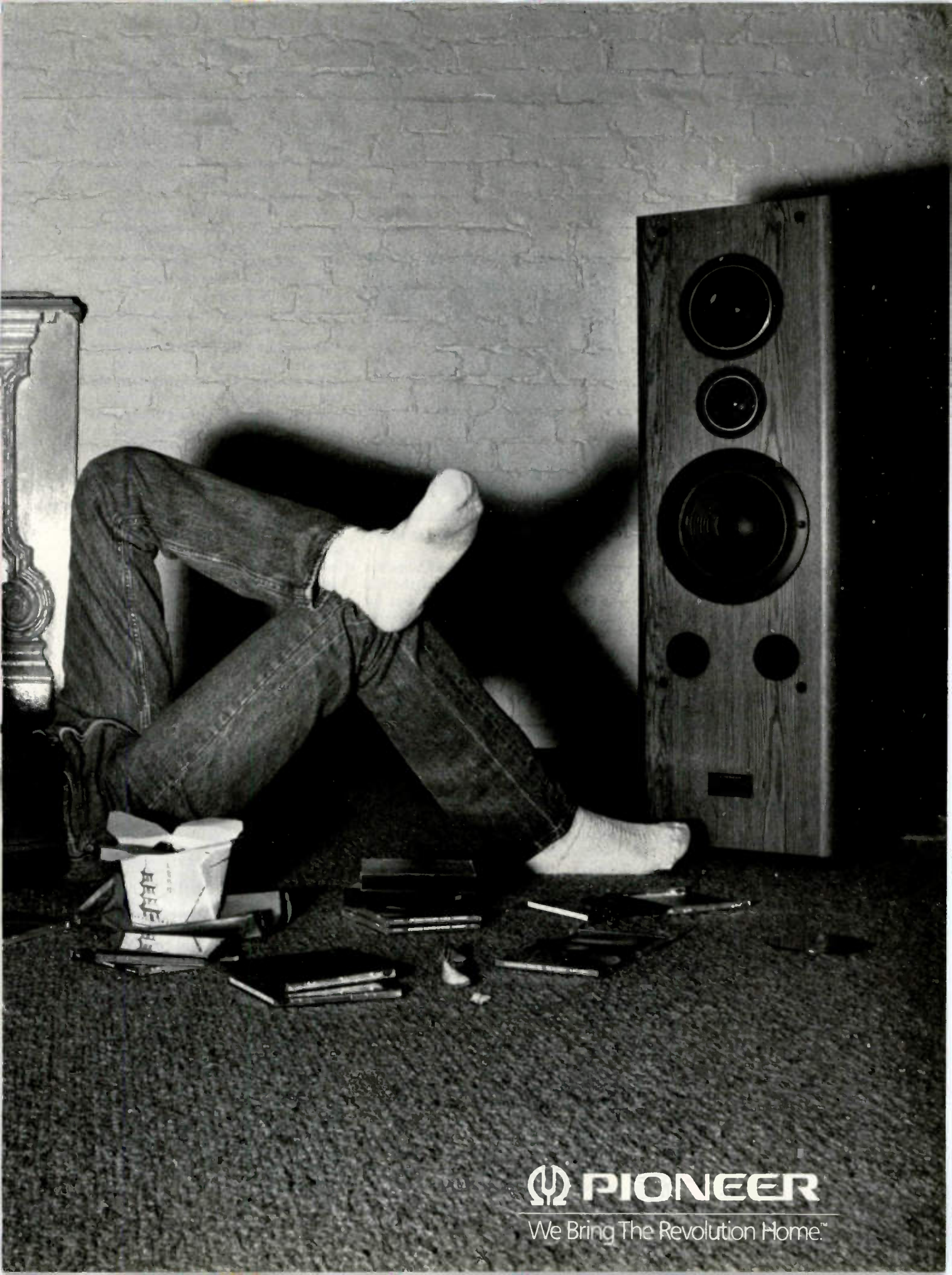


Live in Concert. Forget the tickets. Put away the tux. Just hook up a pair of Pioneer's new ST Series speakers and let the performance begin.

Now there's a new line of advanced speakers designed to bring out the full dynamic range and emotion of today's digital recordings.

Developed by the same team that makes Pioneer's renowned TAD speakers for major recording studios, these speakers feature ceramic carbon dome tweeters for flawlessly brilliant highs and integrated twin woofers for natural, powerful bass. Even the cabinets are superbly crafted to enhance imaging and minimize vibration for smooth true-to-life sound.

So if it's great live performances you're looking for, catch the debut of our new ST Series at your Pioneer dealer today.



 **PIONEER**

We Bring The Revolution Home.™

(Continued from page 25)

an outstanding trait of the laser-video-disc format.

The MDP-700's digital-audio performance also left little to complain about. The linearity-with-dither measurements were inferior to those obtained from the best home CD players, and the CD-tracking performance was



The MDP-700's remote with door flipped up

also less than perfect on the Philips test disc (most CD-only players pass the tests on that disc with flying colors). But, for some reason, both of these characteristics seem to be endemic to this generation of combination CD/video-disc players, regardless of company of origin, and are not audible except under special conditions. Ah, well . . . at least on the audio front there is room for improvement with future models, unlike the situation with the video performance, which is already about as good as can be had outside of a TV studio.

Given the overall similarity in technical performance among combination players, one of the few areas of true competition remaining is that of the "user interface," or how the player (and its handset) feel under the fingers. Frankly, although the MDP-700's front panel is notably uncluttered compared to that of other combination units, I feel that too many buttons were banished to the remote control. In particular, a front-panel numerical keypad would have come in handy for quick and accurate cueing without the remote.

I also had problems with the remote itself. The most minor of them is that most of the advanced cueing controls—the numerical keypad, the repeat controls, etc.—along with the digital-video special-effects buttons, are under a flip-up door. Incredibly, the important still-frame button is also under the door. Fortunately, that door is easy to pry off without damage to it or the remote. But

removal of the door makes the remote look forbiddingly button-filled—and preventing such an appearance is evidently the reason for the door in the first place. The remote is also a bit too wide for single-handed operation, at least with my smallish hands.

My most serious objection to the remote, and thus to the whole player, is that there is a lag time between when you start and stop turning the jog dial and shuttle ring and when the player starts and stops responding to your actions. This period is only a fraction of a second, but it makes cueing up a specific frame, for example, nearly impossible without a considerable amount of to-and-fro'ing on the controls. Sony's jog/shuttle is the first I have found to behave in this way—which is all the more surprising since Sony invented the concept and applied it first to its professional 1/4-inch VCRs, and because the dial/ring assembly on the player's front panel has no such time lag.

If you don't think you'll ever use the advanced cueing features supplied in the MDP-700, these objections will not bother you. But then again, rapid and accurate cueing is supposed to be one of the two *raison d'être* of the videodisc format and is available through the remotes of other players—even some without jog dials or shuttle rings. Luckily, the videodisc's other *raison d'être*—superb picture quality—is extraordinarily well served by the MDP-700.

David Ranada

Channel Balance (at 1 kHz)	
digital	± 0.1 dB
AFM	± 0.2 dB
Audio S/N Ratio (re 0 dB; A-weighted)	
digital (without de-emphasis)	105 dB
digital (with de-emphasis)	108 dB
AFM (CX off)	60 dB
AFM (CX on)	68 dB
Harmonic Distortion (THD at 1 kHz, 0 dB)	
digital	< 0.01%
AFM	0.23%
Linearity (digital; at 1 kHz)	
0 to -50 dB	no measurable error
Audio Output Level (at 0 dB)	
digital	2.08 volts
AFM	0.51 volt
Video Frequency Response	
at 500 kHz	-1/2 dB
at 1.25 MHz	-1 3/4 dB
at 2.0 MHz	-2 1/4 dB
at 3.0 MHz	-3 1/2 dB
at 3.58 MHz	-3 3/4 dB
at 4.1 MHz	-5 1/4 dB
Luminance Level	12% high
Gray-Scale Nonlinearity (worst case)	
	≈ 10%
Chroma Level	≈ 2 1/4 dB low
Chroma Differential Gain	≈ 22%
Chroma Differential Phase	below noise
Median Chroma Phase Error	+6°

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

It's astonishing that the giants whose equipment dominates the audio and audio-video marketplace haven't yet caught on to what makes NAD equipment so attractive. The simplicity and directness of both design and use in a product like the NAD 7100 receiver is wondrously refreshing after all the questionable doodads with which many companies tend to burden their products. The 7100 is one of NAD's flagship Monitor Series models. A year ago we re-

imize the harsh distortion by-products that hard clipping can produce with the switch off. There's also a bridging switch for mono applications such as in-store background music systems.

The preamp includes NAD's bass-EQ switch to compensate for the rolloff in typical compact speakers. The tuner uses the company's FM Noise Reduction, automatically trading away channel separation for an effective S/N (signal-to-noise) improvement of as much as

NAD 7100 AM/FM Receiver



TONY PETTINATO

viewed the NAD 7600; the 7100 retains many of its predecessor's qualities at about half the price. Its technological twists (most of them introduced in the 7600 or previous models) stand out as being included for very specific, practical purposes.

The amplifier section, for example, uses NAD's Power Envelope design to deliver extra kick for short-term music transients via a separate short-duration, high-voltage power supply. This approach boosts dynamic power without the expensive "overdesign" that would be needed to deliver comparable power on continuous test signals. The familiar NAD impedance-matching switch lets you drive the amp a little harder into true 8-ohm loads than would be possible with lower impedances. Soft Clipping deliberately squashes peak waveforms a bit, as they approach the clipping point, to min-

imize the harsh distortion by-products that hard clipping can produce with the switch off. There's also a bridging switch for mono applications such as in-store background music systems. The rest either are available as set-and-forget back-panel options or go about their business without user intervention.

There are back-panel outputs for two speaker pairs, but the binding posts aren't quite as hefty as some. If you attempt to use anything heavier than zip cord, you may have some difficulty—though I managed with 14-gauge wire. Only bared leads are accepted. The FM antenna input is a threaded 75-ohm F connector—the U.S. standard, to which manufacturers based abroad almost invariably decline to conform. A ferrite AM antenna is permanently attached

Dimensions: 17¼ by 4¼ inches (front), 13¾ inches deep plus clearance for controls and connections.

AC Convenience Outlets: One switched, one unswitched (250 watts max. each).

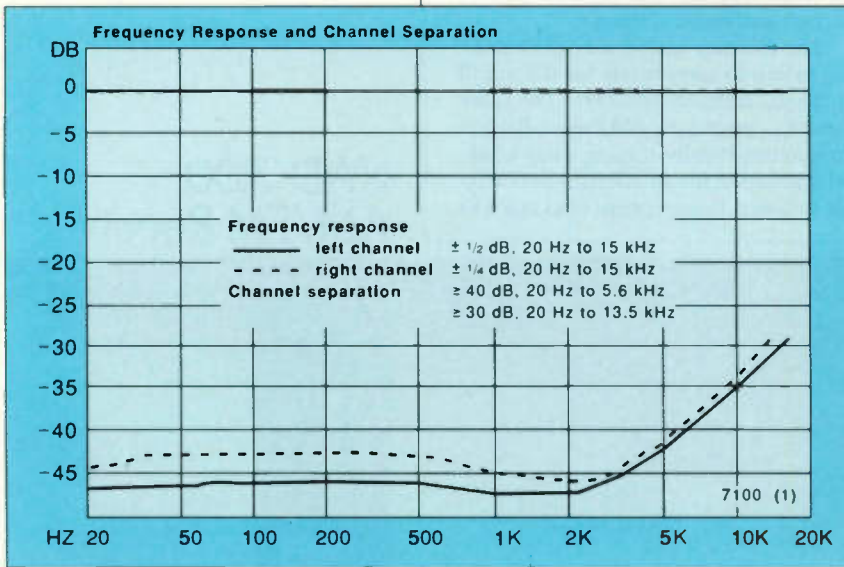
Price: \$748; optional RH-100 rack-mount adapters, \$35 per pair.

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

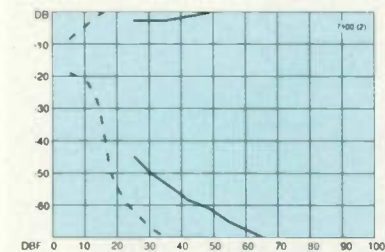
Manufacturer: Made in Taiwan for NAD Electronics, Inc., 575 University Ave., Norwood, Mass. 02062.

FM Tuner Section

Except where otherwise indicated, all data are for the wide ("normal") IF-bandwidth mode.



Sensitivity & Quieting



— stereo quieting (noise), wide IF mode
 - - - mono quieting (noise), wide IF mode

Stereo sensitivity (for 50-dB noise suppression)

33 1/4 dBf at 98 MHz, with 0.52% THD+N
 (31 1/2 dBf at 90 MHz; 32 1/4 dBf at 106 MHz)*

Mono sensitivity (for 50-dB noise suppression)

17 1/2 dBf at 98 MHz

Scan threshold (mono)	35 dBf
Stereo threshold	25 dBf
Stereo S/N ratio (at 65 dBf)	70 dB
Mono S/N ratio (at 65 dBf)	79 dB

Capture Ratio

wide IF mode	1.5 dB
narrow IF mode	3.8 dB

Selectivity

	wide	narrow
alternate channel	58 dB	69 1/2 dB
adjacent channel	4 1/2 dB	17 1/4 dB

Harmonic Distortion (THD+N)

	wide IF mode	stereo	mono
at 100 Hz	0.13%	0.13%	0.12%
at 1 kHz	0.05%	0.05%	0.06%
at 6 kHz	0.15%	0.15%	0.06%
narrow IF mode			
at 100 Hz	1.3%	0.14%	
at 1 kHz	1.1%	0.14%	
at 6 kHz	0.82%	0.17%	

Stereo Pilot Intermodulation

wide IF mode	0.07%
narrow IF mode	0.41%

*With channel separation of 6 3/4 dB. See text.

to the back panel by a swivel bracket, but spring-loaded terminals for an external long-wire AM antenna and ground

reception between the two decks. The back panel also has pre-out/main-in jacks for an outboard signal processor.

Supplied with the 7100 is an NAD System Remote, which takes two AA cells and is designed to control other NAD models as well. However, the manual supplied with my test sample didn't reflect the recent decision to supply a system remote instead of a dedicated—but similar—one; the manual you receive if you buy the 7100 should reflect the change. The shape of the remote is exceptionally pleasant to work with, either handheld or on a flat surface.

The remote has selectors for all inputs (CD, phono, and video, in addition to the two tape decks and the two tuning bands), a 20-dB attenuator, preset selectors, tuning and volume adjustments, and AC power—all repeating options of the front panel. NAD calls the attenuator "low level" (most companies would call it a "mute"), and—like the 7600—the 7100 turns on with this switch engaged so you don't suffer aural shock if someone left the volume too high or the FM tuned to interstation noise.

The tuner sounds excellent, but the sensitivity curves require a special caveat. Unlike most home receivers, this one doesn't just diddle a little with high-frequency separation in order to cancel some of the most objectionable noise on weak FM stations. At the stereo sensitivity-rating point (that is, at the signal strength for which the signal-to-noise ratio is 50 dB), channel separation measures a mere 6 3/4 dB, and it improves only gradually as signal strength rises.

Stereo imaging is still possible with no more separation than that, though it will put a premium on speaker placement and acoustic treatment in some rooms and with some equipment. We would question the "stereo-ness" when separation drops significantly below 10 dB even in car equipment, and our criteria generally are more demanding for the home. So while good reception is available to quite low signal strengths, it is moot whether the rating point should be considered stereo. With the narrow IF mode, separation is reduced to about 17 dB across the board, even at the standard test-signal level of 65 dBf.

In either IF mode, FM frequency response is exceptionally flat, with negligible rolloff at very high frequencies and essentially none in the deep bass. The narrow mode also degrades somewhat the otherwise very good capture ratio—which is to be expected. Alternate-channel selectivity, which is only fair in the wide mode, doesn't improve a great deal in the narrow mode, but the adjacent-

are provided as well.

Manual tuning progresses by full channels (10-kHz steps) on AM, quarter-channels (0.05-MHz steps) on FM. The signal-strength indicator works on AM as well as FM (which is unique with NAD, as far as I know, among current receiver models) and has five segments. As measured by Diversified Science Laboratories, on FM the first illuminates at about 10 dBf, the second at 32 dBf, and the remainder at intervals of 10 dB or a little more—for a top threshold of 67 dBf. This is a very comprehensive range, though the spaces between thresholds are wide enough to allow a lot of useful information to fall through, if you have an antenna rotator.

There are a scan option (an on/off button just below the up and down tuning buttons) and, of course, presets. Two banks of presets store seven stations each—AM or FM, in any mix—for a total of 14. NAD has used bicolor LEDs as a novel and subtly effective way to distinguish between the two banks. Both the bank-selector pilot and that of the chosen preset (if any) glow green when one bank is chosen, amber for the other.

The front-panel mono button affects all signal sources, not just stereo FM. In an unusual option, NAD has wired it so that it will affect the feed to your tape deck (or decks) unless you are monitoring from them; when you press either of the two tape-monitor buttons, the mono mode moves into the monitor circuit to affect only what you hear during the taping—not what goes to the tape. A separate switch allows you to dub in either di-

channel selectivity jumps from excellent to spectacular. The narrow mode always increases distortion; here, the increase is negligible in mono but more substantial in stereo. In A/B tests on actual stations, however, the difference, at worst, is subtle.

Phono response is reasonably flat: not quite as flat in the midrange as that of the 7600, but with less rolloff in the extreme bass. Both MM (fixed-coil) and MC (moving-coil) options are available, chosen at yet another back-panel set-and-forget switch. With the MM option, response rises by about 3/4 dB in the bass (centered on 100 Hz) and about 1/4 dB in the treble (10 kHz). The bass rise with the MC option is slightly greater (1 dB), but it rolls off a little more steeply in the extreme bass; in the treble, however, it hits +1 dB just above 12 kHz and keeps rising to +1 1/2 dB at 20 kHz. Input impedance of the MC option is considerably higher than usual, and sensitivity is lower. What practical difference (if any) this will make will depend on the cartridge you choose to use with it.

Little infrasonic rolloff is built into either phono option, but there is a switchable infrasonic filter. Although it's fairly steep, the frequency of its inflection (-3 dB) point is quite low, restricting its ability to attenuate warp output. It's always best to control this sonic pest at its source through a careful arm/cartridge match, but a higher inflection point wouldn't have hurt.

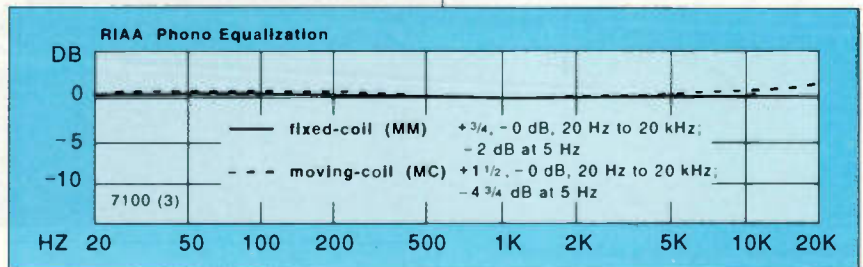
The tone controls are exceptional in both treble/bass and boost/cut symmetry, but rotation near the "flat" detents produces considerably greater response alteration than similar rotation near the controls' extremes. The bass control shelves below 100 Hz with a range of about ±10 dB; the treble's maxima are at 20 kHz, with nearly the same boost/cut range. The bass-EQ option injects a peak of 7 dB at about 35 Hz, with a rolloff of 18 dB per octave below it and a more gradual return to flat response above it. The loudness compensation responds relatively little to changes in volume setting. At its maximum it introduces rises (relative to response around 1 or 2 kHz) of about 10 dB below 100 Hz and about 5 dB at 20 kHz.

The amplifier section was measured into an 8-ohm load, and its impedance switch was set accordingly, except where a lower impedance is specified in our data column. For those measurements, the switch was at the 4-ohm setting. The latter is considered "normal" by NAD because so many speakers—even though they may carry an 8-ohm rating—dip to considerably lower impedances in im-

portant parts of the frequency band and because simultaneous use of both sets of speaker connections with 8-ohm models will result in a 4-ohm load. Thus the rule is: Set the switch for 4 ohms unless you're sure the load really is 8 ohms.

The back panel specifically indicates that no load lower than 4 ohms should be used, though the spec sheet lists (among other things) dynamic power with a 2-ohm load. The figures shown in the data column were measured after output stabilized. For only a few repetitions of the tone burst used in this test, the output was substantially higher. Which part of the cycle (which is controlled by the Power Envelope design) will mean most in driving a real 2-ohm load will depend on the actual waveforms it's attempting to reproduce. But the point is moot anyway, if the back-panel admonition is to be heeded.

With loads of higher impedance, behavior is very much what you would expect of an NAD rated at 17 dBW per side. Output at clipping is a little higher than the rating; that in the dynamic-power test is as much as 6 dB greater—four times as much, or around 200 watts versus the 50 of the rating. With the soft-clipping feature engaged, output is not quite as great at noticeable clipping (the maximum measured difference is 1.8 dB), which is to be expected. What we didn't expect was the very slightly lower distortion figures at rated output (and at



high frequencies) with soft clipping engaged. Since this feature actually distorts the waveform in order to make it sound better at clipping, this measurement usually favors the alternative.

Although it certainly doesn't wear its technology on its sleeve, so to speak, the 7100 is essentially an inventively designed high-performance receiver. If you must have a black faceplate and a lot of big knobs, buttons, and lights, look elsewhere. But if you want a receiver with solid performance and controls that really make sense—and don't want to mortgage your next of kin to get it—NAD is among the very few brands you need investigate, and the 7100 is at the top of its class.

Robert Long

Intermodulation Distortion (mono)	
wide IF mode	0.02%
narrow IF mode	0.06%
AM Suppression	62 dB
Pilot (19 kHz) Suppression	67 dB
Subcarrier (38 kHz) Suppression	112 1/2 dB

Amplifier Section

Power measurements into 4- and 2-ohm loads were made with the impedance switch in the 4-ohm ("normal") position. All other data were taken with the switch set to 8 ohms ("high"). Except where noted, all measurements were taken with the soft clipping off.

Rated Power (8-ohm load)	
	17.0 dBW (50 watts)/channel
Output at Clipping (at 1 kHz; both channels driven)	
soft clipping off	
8-ohm load	18.3 dBW (68 watts)/channel
4-ohm load	18.4 dBW (69 watts)/channel
soft clipping on	
8-ohm load	18.0 dBW (63 watts)/channel
4-ohm load	18.2 dBW (66 watts)/channel
Dynamic Power (at 1 kHz)	
soft clipping off	
8-ohm load	23.0 dBW
4-ohm load	23.4 dBW
2-ohm load	20.3 dBW*
soft clipping on	
8-ohm load	21.2 dBW
4-ohm load	22.5 dBW
2-ohm load	20.2 dBW*
Dynamic Headroom (re rated power; 8-ohm load)	
	6.0 dB
Harmonic Distortion (THD; 20 Hz to 20 kHz)	
at 17.0 dBW (50 watts)	≤ 0.014% **
at 0 dBW (1 watt)	≤ 0.011%
Frequency Response	
	± 1/2 dB, < 10 Hz to 24 kHz
	+ 1/2, -3 dB, < 10 Hz to 70 kHz

Sensitivity & Noise (re 0 dBW; A-weighting)		
	sensitivity	S/N ratio
aux	23 mV	93 3/4 dB
fixed-coil (MM) phono	0.34 mV	77 1/4 dB
moving-coil (MC) phono	25 μV	79 dB
Input Overload (1-kHz clipping)		
aux		> 10 volts
fixed-coil (MM) phono		190 mV
moving-coil (MC) phono		13 mV
Input Impedance		
aux	49k ohms	
fixed-coil (MM) phono	48k ohms; 120 pF	
moving-coil (MC) phono	47k ohms	
Output Impedance (to tape)		
		100 ohms
Damping Factor (at 50 Hz; re 8 ohms)		
		107
Channel Separation (at 1 kHz; aux input)		
		80 3/4 dB
Infrasonic Filter		
	-3 dB at 10 Hz; ≈ 12 dB/octave	

* See text.

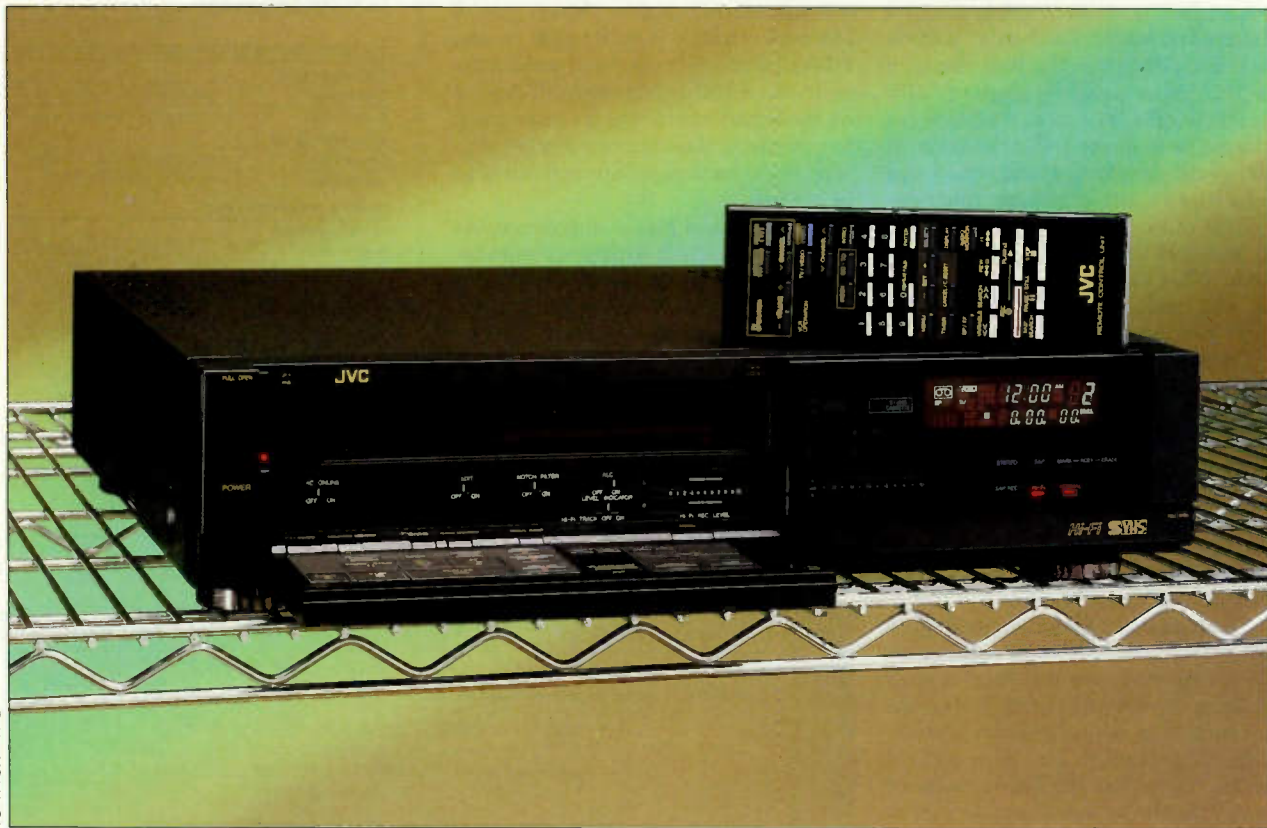
** Total harmonic distortion at rated power with soft clipping on was ≤ 0.010 percent.

**JVC HR-S5000U
Super VHS
Hi-Fi VCR**

If you'd like to save a few dollars and are willing to forgo the digital goodies contained in JVC's HR-S8000U (test report, December 1988), I suggest you investigate the company's HR-S5000U. The unit is a good deal less expensive than its big brother but so loaded with features that it may take you weeks to put it through its paces. (Fortunately, the manual is better than average in guiding you around the nooks and crannies.) The HR-S5000U is also an unusually good-looking VCR. With the front

addition to the normal pin-jack composite-video inputs and outputs, the 5000 also has multipin S-Video connectors that provide separate chroma and luminance lines to and from suitably equipped monitors and video sources.

On the audio front, the 5000 provides high-quality stereo recording via its VHS Hi-Fi system and conventional mono recording on the "edge," or linear, track. Recording level on the mono track is maintained by an automatic level control circuit; on the Hi-Fi tracks, the ALC



TONY PETTINATO

Dimensions: 17¼ by 4¼ inches (front), 14¾ inches deep plus clearance for connections.

AC Convenience Outlets: One switched (300 watts max.).

Price: \$1,299.

Warranty: One year parts, 90 days labor.

Manufacturer: Victor Company of Japan.

U.S. Distributor: JVC Company of America, 41 Slater Dr., Elmwood Park, N.J. 07407.

panels closed, every control except the power switch is hidden, and even that is absolutely flush with the front surface. But most important, Diversified Science Laboratories reports that this new VCR works great! In particular, its Hi-Fi recording system tracks beautifully, a perfection the HR-S8000U sadly lacked—at least in the several samples tested.

Topping the 5000's list of features is Super VHS video recording, the potential of which for more-than-300-line horizontal resolution far exceeds that of the standard VHS format. To get the most out of standard recording, however, the 5000 has the full set of HQ (High Quality) system circuits and a special comb filter to separate the chrominance and luminance portions of the signal. In

can be switched on or off for automatic or manual level setting, respectively. Two sliders (with center detents that suggest the appropriate settings for recording off-the-air) serve to adjust the Hi-Fi recording level, which, in turn, is indicated by a multisegment display. The display can be switched off, if you prefer, or used as a "tracking" indicator when adjusting head alignment for a tape that was recorded on a different deck.

JVC's Super DA-4 head system provides excellent special playback effects on tapes recorded at either of its standard speeds: SP or EP. (The deck reproduces but does not record or offer the special playback effects on LP recordings.) Still frame, frame advance, and

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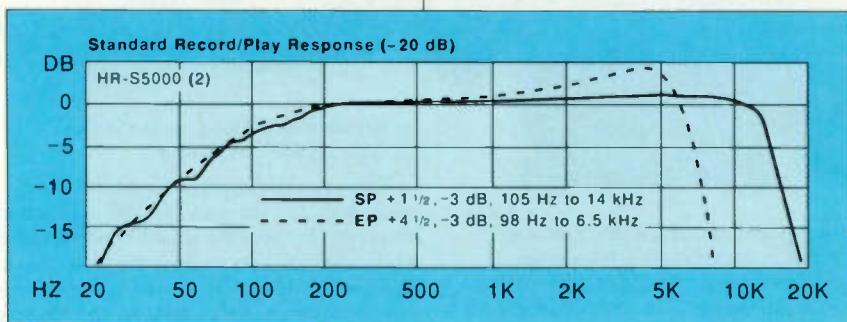
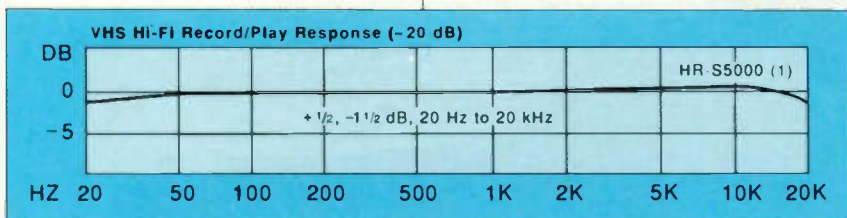
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Test Reports

VCR Section

Except where otherwise indicated, the recording data shown here apply to both speeds. SP and EP. All measurements were made at the direct audio and video outputs, with test signals injected through the direct audio and video inputs. For VHS Hi-Fi, the 0-dB reference input level is the voltage required to produce a 0-dB reading on the VCR's audio level meter; for the standard audio recording mode, it is the voltage at which the automatic level control (ALC) produces 3 dB of compression at 315 Hz. The 0-dB reference output level is the output voltage from a 0-dB input.



Audio S/N Ratio (re 0-dB output; R/P; A-weighted)

	standard	VHS Hi-Fi
SP	52 1/4 dB	77 dB
EP	50 1/2 dB	75 dB

Indicator Reading for 3% Distortion (315 Hz)

VHS Hi-Fi	> +10 dB
-----------	----------

Distortion (THD at -10 dB input; 50 Hz to 5 kHz)

	standard	VHS Hi-Fi
SP	≤ 3.6%	≤ 0.61%
EP	≤ 2.5%	≤ 0.61%

Channel Separation (315 Hz; VHS Hi-Fi)

	72 dB
--	-------

Indicator "Ballistics"

Response time	1.6 msec
Decay time	≈ 400 msec
Overshoot	0 dB

Flutter (ANSI-weighted peak; R/P; average)

	standard	VHS Hi-Fi
SP	± 0.18%	< ± 0.01%
EP	± 0.32%	< ± 0.01%

Sensitivity (for 0-dB output; 315 Hz)

VHS Hi-Fi	295 mV*
standard	960 mV

Audio Output Level (from 0-dB input; 315 Hz)

VHS Hi-Fi	0.38 volt
standard	0.41 volt

Audio Input Impedance (VHS Hi-Fi)

	82k ohms
--	----------

S-VHS Video Record/Play Response

	SP	EP
at 500 kHz	flat	flat
at 1.5 MHz	-3/4 dB	-1 1/2 dB
at 2.0 MHz	-1 dB	-2 3/4 dB
at 3.0 MHz	-2 3/4 dB	-4 1/2 dB
at 3.58 MHz	-4 1/4 dB	-6 dB
at 4.2 MHz	-7 dB	-8 1/2 dB

slow motion (at any of five speeds ranging from one-thirtieth to one-sixth normal) are free of noise bars and have essentially the same resolution as the standard picture.

Double-speed playback in the forward direction is essentially as perfect as the still-frame and slow-motion modes. Playback at the variable-search speeds—three, five, seven, or 21 times normal with an EP recording—is possible in both directions and elicits only slight picture tearing as the head scans across

The HR-S5000U also features the VHS Index Search System, which automatically records index codes at the beginning of each recording that is initiated from stop (this includes timer-activated recordings). You can record extra index codes manually—even after the recording is made—or erase unnecessary codes at any time, provided that the erasure-prevention tab has not been removed from the cassette.

Once index marks have been laid down, you can advance to any one of them by specifying the number of marks you wish to skip, from the present point to your desired destination. JVC's 5000 will skip as many as nine coded programs at a time and can locate the desired mark at shuttle-search speed (i.e., with picture) or, even faster, from the rewind and fast-forward modes (without picture).

If you're not sure where you want to go, the 5000's shuttle-search plays back the beginning of each indexed program for approximately five seconds. On the other hand, if you know by elapsed time where you want to advance the tape to, you can skip ahead by a precise number of minutes and seconds. There are also a counter-memory function to return the tape to a counter-zero reading and a "next-function-memory" feature that enables you to command an action to occur after rewind. Thus, you can set up the deck for automatic replay, ejection, power turnoff, or timer-standby following rewind.

the tracks. The picture is essentially free of gross noise bars at any speed and remains quite viewable.

The special effects are fully available from the HR-S5000U's wireless remote. In fact, some features (including, oddly, the choice of recording speed, which, incidentally, cannot be altered without stopping the tape) are accessible *only* via the remote. Double-speed playback is commanded by pressing PLAY twice in succession. What you get when you press one of the two variable-search buttons depends upon whether you started the search mode from PAUSE/STILL or from PLAY and upon the number of times you press VARIABLE SEARCH.

Bidirectional "shuttle-search" also is available by pressing the rewind or fast-forward buttons when the VCR is in the playback mode. (From stop, these buttons elicit normal high-speed tape winding without picture.) There is also a skip/search function to enable you to zip through as much as two minutes of tape at a time. To do this, press SKIP/SEARCH on the remote from one to four times. Each press advances the tape by 30 seconds. As with the other "special effects," PLAY can be used to cancel this mode.

The 5000's flying erase head, precision real-time tape counter, and edit switch facilitate insert editing. The edit switch presumably defeats the deck's edge-enhancement circuitry to prevent video overloads when copying, while the flying erase head selectively erases the video track rather than wiping the entire video area of the tape clean. This permits tighter editing and serves to prevent video glitches at the edit points. Finally, the real-time counter can be used to stop the editing procedure at the precise point you wish.

The 5000 uses a frequency-synthesis cable-compatible front end pretuned to the 155 channels available either via broadcast or cable. Once you have chosen the mode (TV or CATV), you can tune any channel available in that mode via the ten-key pad on the remote. Alternatively, you can scan through the deck's channel memory in sequence. You can store or skip channels in memory either manually or automatically. In the latter mode, the VCR scans the entire broadcast (or cable) band and decides for itself which have viewable pic-

tures. These are retained in memory; the rest are dropped. Once you've gone through the auto-set mode, you can "touch it up" with the manual setting.

An extensive set of on-screen displays (thankfully, with numerous instructions) guides you through the setup and through programming the fourteen-day/eight-event timer. The initial menu offers four choices: program set, status set, clock set, and channel set. Programming is quite logical, and you're aided by reasonably good on-screen instructions. My one quibble is the rather skimpy ten-minute memory and clock backup during a power outage. In the boonies where I live, hour-long power outages are not uncommon.

If you have failed to program the automatic timer, all is not lost. Pressing RECORD while recording (or twice from STOP) activates Instant Timer Recording and pops up an on-screen display of the ITR time remaining. Each time you press RECORD, the recording time increases by 30 minutes, to a maximum of four hours. You can use SELECT and SET to refine the time remaining or set it to as long as eight hours and 59 minutes (if you can find a tape that records that long).

In DSL's tests, the JVC HR-S5000U was a stellar performer. As stated previously, VHS Hi-Fi tracking is excellent—within a tenth of a decibel or so over DSL's 30-dB test range. This means that the dynamic range is neither compressed nor expanded and that frequency response is identical at all test levels. Furthermore, the VHS Hi-Fi frequency response is very good. Edge-track (mono) response is not bad either, but certainly no match for that of the Hi-Fi tracks.

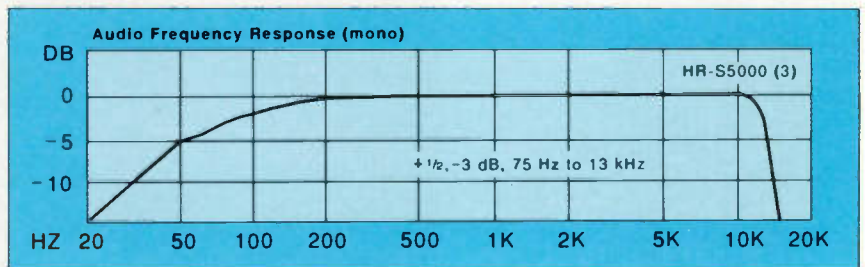
The A-weighted noise with edge-track playback is remarkably low for a VCR, too—better than 50 dB below the "knee" of the ALC curve at the slow speed and 2 dB lower still at the fast speed. This translates into a dynamic range of 53 to 55 dB for continuous signals and somewhat more than that for transients that escape ALC action. It's conceivable that this performance may be attributable, in part at least, to the tape that DSL used, which, in this case, was JVC's own S-VHS brand. But even though the edge track is quieter than average, it is substantially inferior to the Hi-Fi tracks; A-weighted noise level on these is 75 dB or more below DSL's reference level, and there is 19 dB of headroom above the reference to the 315-Hz, 3-percent distortion point. This means a low-frequency dynamic range of about 95 dB—almost as good as a CD.

Hi-Fi performance also has it, hands

down, over the edge track in terms of flutter and distortion. Flutter is below measurement limits with the Hi-Fi system, whereas it averages almost ± 0.2 percent at SP and more than ± 0.3 percent at EP with "normal" recording. Those flutter levels can readily be heard in lots of music. And though, at DSL's test level, distortion barely exceeds $\frac{1}{2}$ percent with Hi-Fi recording (and then only at the lowest frequencies), it averages more than $\frac{1}{4}$ percent over much of the band with SP edge-track recording and reaches 3.6 percent at 50 Hz. In general, distortion with edge-track recording at the slower speed is substantially worse.

The results of comparison between S-VHS video performance and "standard" VHS parallel those between VHS Hi-Fi audio recording and "standard" edge-track sound—which is to say that the HR-S5000U's S-VHS performance is in no respect worse than that in the standard mode and, in the key respect of video frequency response (i.e., horizontal resolution), is way out in front.

By our stringent -6-dB criterion for determining resolution, the deck's S-VHS performance at the faster speed comes in at approximately 320 lines; it's only slightly less in EP. Furthermore, apparent resolution can be extended by advancing the sharpness control by a small amount. The control has greater



range and operates over a wider band of frequencies than is typical. I found it very effective in sharpening an S-VHS picture but less so with conventional VHS recordings, whose bandwidth barely makes it up into the control's effective range. In the standard VHS mode, horizontal resolution is limited to approximately 150 lines independent of the recording speed.

Chroma (color) performance was virtually identical at both speeds and both recording modes and, on the whole, very good. Chroma level, although below the reference point, is still higher than I've found on many decks. The chroma phase is essentially perfect, and there is negligible differential-gain or differential-phase error. All this means better than average

Test Reports

Regular VHS Video Record/Play Response

	SP	EP
at 500 kHz	+ 3/4 dB	+ 1 1/4 dB
at 1.5 MHz	-4 1/4 dB	-4 3/4 dB
at 2.0 MHz	-8 1/2 dB	-9 dB
at 3.0 MHz	-15 1/2 dB	-14 dB
at 3.58 MHz	**	**
at 4.2 MHz	**	**

Sharpness Control Range (S-VHS mode)

at 500 kHz	+ 1/2, -1 3/4 dB
at 1.5 MHz	+ 3, -7 3/4 dB
at 2.0 MHz	+ 4 1/4, -10 dB
at 3.0 MHz	+ 5 3/4, -9 1/2 dB
at 3.58 MHz	+ 6 3/4, -8 3/4 dB
at 4.2 MHz	+ 6 3/4, -11 1/2 dB

Luminance Level

S-VHS	3% high
VHS	standard

Gray-Scale Nonlinearity (worst case)

S-VHS	\approx 16%
VHS	\approx 22%

Chroma Level	\approx 3 dB low
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Chroma Differential Gain

S-VHS	\approx 6%
VHS	\approx 5%

Chroma Differential Phase

S-VHS	\approx $\pm 2^\circ$
VHS	\approx $\pm 2^\circ$

Median Chroma Phase Error	0°
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*With recording level control at detent. Sensitivity is 95 millivolts with the control at maximum.

**Too low to measure.

TV Tuner Section

All measurements were taken at the direct audio and video outputs.

Audio S/N Ratio (mono, A-weighted)

best case (no color or luminance)	66 dB
worst case (multiburst signal)	26 3/4 dB

Residual Horizontal-Scan Component (15.7 kHz)

	< -100 dB
--	-----------

Maximum Audio Output Level (100% modulation)

VHS Hi-Fi mode	1.83 volts
standard mode	0.38 volt

Audio Output Impedance	1,000 ohms
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Video Frequency Response

at 500 kHz	- 1/4 dB
at 1.5 MHz	- 1/4 dB
at 2.0 MHz	flat
at 3.0 MHz	- 1/2 dB
at 3.58 MHz	- 3/4 dB
at 4.2 MHz	- 11 dB

Test Reports

Luminance Level	4% high	
Gray-Scale Nonlinearity (worst case)	≈8%	
Chroma Differential Gain	≈25%	
Chroma Differential Phase	≈±3°	
Chroma Error	level	phase
red	-3/4 dB	+3°
magenta	-3/4 dB	+3°
blue	-1/2 dB	+1°
cyan	-1 dB	+9°
green	-1 dB	+6°
yellow	-1 dB	+8°
median error	-3/4 dB	+5°
uncorrectable error	± 1/4 dB	±4°

color in both modes. Luminance level is right on the mark (or very close to it), and the gray-scale linearity is acceptable, if not perfect. Both on the bench and in the viewing room, I was impressed with the low chroma and luminance noise produced by this deck. Colors were noticeably less "blotchy" than usual in large areas, and the picture remained clean even with the sharpness advanced.

The tuner is a good mate for this deck. Video response is almost perfectly flat to the color-burst frequency, so horizontal resolution is at least 300 lines. Luminance and chrominance levels are very close to the mark, and although the uncorrectable chroma phase error is

slightly more than I've seen on some other tuners, it's in the ballpark. Gray-scale linearity is excellent, as is chroma differential phase. The chroma differential-gain error is confined entirely to the top-most brightness level, and I could not see the effect in normal broadcast pictures. The tuner's audio response isn't the best the lab has found, but it's acceptable, given the often limited bandwidth of TV broadcasts. Audio signal-to-noise ratio with normal video signals is excellent, and the horizontal-scan whistle is totally removed.

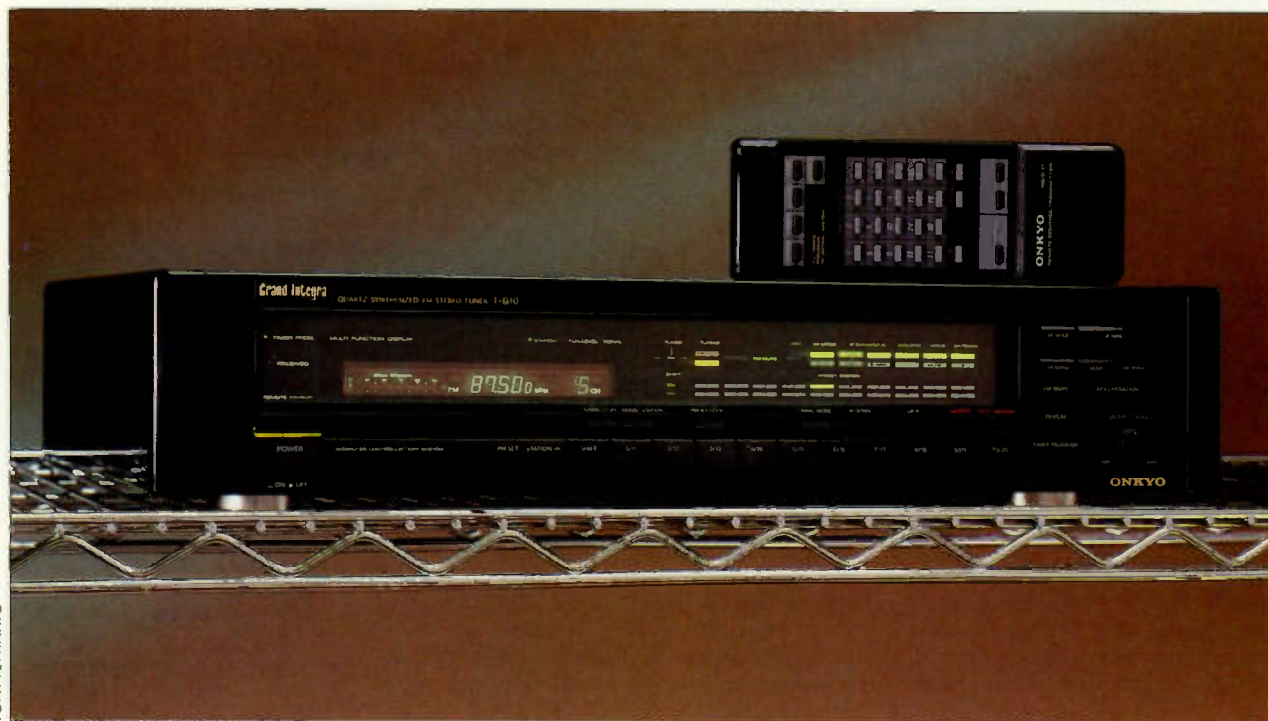
Check this one out. In my book it's a winner. What's more, I like the way it looks!

Edward J. Foster

Onkyo T-G10 FM Tuner

As a model in the premium, limited-distribution Grand Integra series, the T-G10 is the flagship tuner of the Onkyo line. And a proud flagship it is, flying almost every conceivable technological banner an FM

make much sense when the antennas are stationary, however, and I'm relieved to discover from Onkyo's manual that this is not the purpose here. The second antenna input is included to allow use of two differently oriented antennas (which



TONY PETTINATO

Dimensions: 19 by 4 inches (front), 13 inches deep plus clearance for connections.

Price: \$2,200.

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

Manufacturer: Onkyo Corp., Japan.

U.S. Distributor: Onkyo U.S.A. Corp., 200 Williams Dr., Ramsey, N.J. 07446.

tuner can muster—including some that I've never encountered elsewhere.

The first innovation you notice on hooking up the T-G10 is the dual coaxial antenna inputs. In car stereo, such an arrangement may be used for "diversity tuning," in which a tuner switches automatically between antennas to get optimum reception at any instant and thus minimize "picket-fencing." This doesn't

can be more efficient than a single, rotatable model, depending on the specific reception problems involved) or to permit the use of both an antenna and a cable feed where neither brings in all stations optimally.

The back-panel antenna jacks are the DIN type typical of Japanese products: similar in size and overall shape to the F connectors used in the United States, ex-

cept that they're unthreaded. Because the threaded variety will accept both threaded and slip-on cable connectors, threaded chassis inputs would have been more versatile—the type used here will accept only slip-on connectors. Threaded types also are more rugged and make a more positive ground. That's why they are standard in this country, particularly for cable companies, which may take severe umbrage if you alter their termination in order to suit your tuner.

The back panel also has two pairs of outputs: one with fixed level and one that can be varied from a front-panel control. Two further jacks deliver signals to drive the vertical and horizontal inputs of an outboard oscilloscope, whose display can then be used to assess multipath in the received signal and, therefore, optimum antenna orientation. Offhand, I can think of only three other tuners—all of them classics, even in their own times—that have offered a comparable feature.

But the unique properties of the tuner are centered in what Onkyo calls the APR (Automatic Precision Reception) System. It chooses between the two antennas, switches to the "local" (attenuated) RF mode in the presence of strong local stations, chooses between the three IF bandwidth modes (depending on the presence and strength of a potentially interfering nearby signal), introduces a high blend on any stereo signal weak enough to be otherwise subject to hiss with full separation, and reverts to mono reception on even weaker stations.

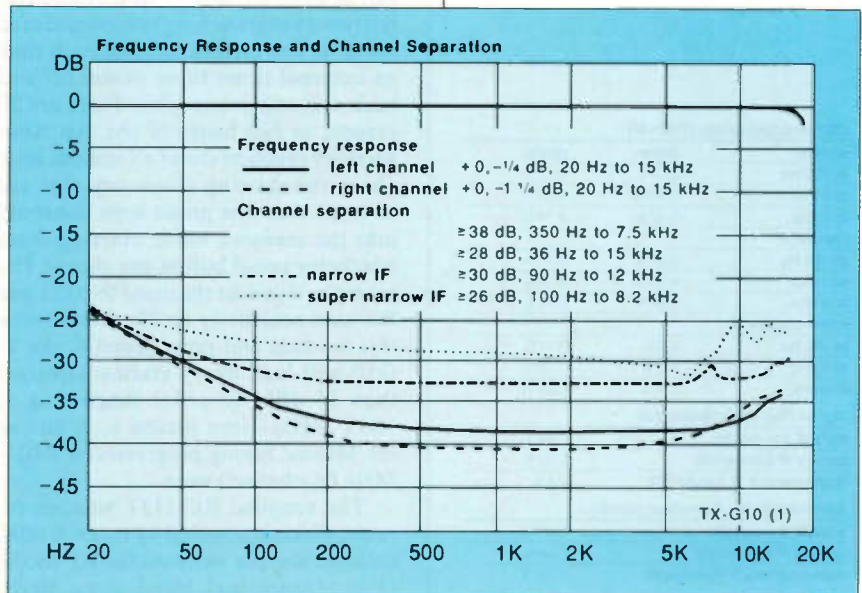
All of these functions can be overridden manually, if you think you can do better than the APR "computer" in a given situation. With so many functions and only a single test location, I can't be certain how often manual control might prove useful. I never found a significant advantage in overriding the APR, though from Onkyo's description of its operation I suspect that it may make weak stations hard to receive well in strong-signal areas unless you switch RF from LOCAL to the DX mode.

Two especially strong points in the APR design are the way it behaves when reception conditions change and how it influences the presets. Any automatic-adjustment scheme that is too sensitive to changes in the received signal will modulate the output in some way in response to those changes—a dynamic effect that can be far more annoying than the reception ailment the circuitry is seeking to cure. So Onkyo locks the APR once you're tuned. When a change in reception conditions—say, a reorientation of your antenna—suggests that APR

should have another go at the signal, you can simply press the front-panel APR-on button to reactivate it. Whatever settings you end up with—automatic or manual—will be memorized along with the station frequency when you store to a preset.

As an aid in assessing whether manual touch-up may be in order, Onkyo

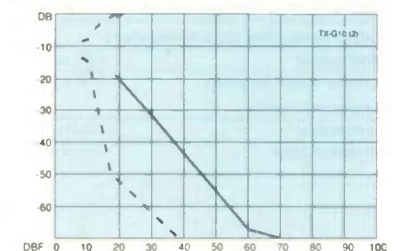
Unless otherwise noted, all measurements were made from the fixed output, in the DX mode, with the wide IF bandwidth option, for left-channel output, and with the high-blend off.



provides indicators to show what settings APR has chosen. More important, particularly if you have an antenna rotator, is the dual signal-strength indication. A relatively conventional "bar graph" at the left of the main display continuously shows reception level in nominal 10-dB increments. But for a more precise figure, press a front-panel switch and you'll get a numerical readout where the preset number normally appears. This figure has a nominal resolution of 1 dB and is calibrated on the same scale as the bar graph. The useful range of these indicators is from about 21 dBf (about 10 dB above the useful mono reception threshold) to 77 dBf (high enough that signal strength no longer is a meaningful issue). Higher levels are indicated as well, but indicator response is somewhat erratic here.

Considering how extremely rare such detailed indications are, it is perhaps unreasonable to complain that the calibration, as measured by Diversified Science Laboratories, is not as accurate as the manual would lead you to believe. Around 30 dB, the readings do, indeed, correspond closely to antenna-input signal strength in dBf, as Onkyo says they should. But at 21 dBf the indicator reads 5 dB, while it shows 60 dB for a 77-dBf input. Fortunately, what you need to

Sensitivity & Quieting



—	stereo quieting (noise)
- - -	mono quieting (noise)
Stereo sensitivity (for 50-dB noise suppression)	
41 dBf at 98 MHz, with 0.50% THD + N (42 3/4 dBf at 90 MHz; 41 1/4 dBf at 106 MHz)	
Mono sensitivity (for 50-dB noise suppression)	
17 1/4 dBf at 98 MHz	
Muting threshold	29 dBf
Stereo threshold	18 dBf
Stereo S/N ratio (at 65 dBf)	70 1/2 dB
Mono S/N ratio (at 65 dBf)	81 1/2 dB
Capture Ratio	
wide IF bandwidth	1.5 dB
narrow IF bandwidth	2.5 dB
super-narrow IF bandwidth	7.0 dB
Selectivity, wide IF bandwidth	
alternate-channel	48 1/2 dB
adjacent-channel	5 1/2 dB
Selectivity, narrow IF bandwidth	
alternate-channel	66 dB
adjacent-channel	14 1/4 dB
Selectivity, super-narrow IF bandwidth	
alternate-channel	70 1/4 dB
adjacent-channel	44 3/4 dB

Test Reports

Harmonic Distortion (THD+N)

wide IF	stereo	mono
at 100 Hz	0.13%	0.11%
at 1 kHz	0.13%	0.05%
at 6 kHz	0.17%	0.14%

narrow IF

at 100 Hz	0.52%	0.11%
at 1 kHz	0.36%	0.10%
at 6 kHz	0.36%	0.14%

super-narrow IF

at 100 Hz	4.6%	0.14%
at 1 kHz	4.0%	0.18%
at 6 kHz	3.4%	0.34%

Stereo Pilot Intermodulation

wide IF bandwidth	0.04%
narrow IF bandwidth	0.20%
super-narrow IF bandwidth	2.2%

Intermodulation Distortion (mono)

wide IF bandwidth	0.02%
narrow IF bandwidth	0.05%
super-narrow IF bandwidth	0.09%

AM Suppression	64 1/2 dB
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Pilot (19-kHz) Suppression	84 dB
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Subcarrier (38-kHz) Suppression	119 1/4 dB
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Output Level (from 100% modulation)

fixed output	0.80 volt
variable output (at max.)	1.60 volts

Output Impedance

fixed output	1,290 ohms
variable output	790 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.

know most from such metering is *relative* signal strength as the antenna turns—and *that* the T-G10 supplies with a detail far beyond the ability of any other model we have tested in years.

Three types of automatic tuning are available: the usual bidirectional scan tuning, with three threshold options (nominally 17, 27, and 37 dB, but measuring 28½, 35, and 47 dBf, respectively); timer programming (a sequence of as many as five presets, stepped each time an external timer turns power off and back on); and preset scan. There are 20 presets, in two banks of ten. An Auto Memory function stores all stations at or above the starting frequency that are stronger than the preset scan threshold into the memory bank, starting from whichever preset button you choose. For example, if you set the tuner to 100.1 and the scan sensitivity to 27, then invoke this function and press preset 6, the T-G10 will load every station stronger than 35 dBf—in order (beginning at 100.1 MHz)—into presets 6, 7, and so on. Manual tuning progresses by 0.025-MHz (¼-channel) steps.

The supplied RC-113T wireless remote, which is powered by two AA cells, includes stepper switches for RF mode, IF bandwidth, high blend, mono/stereo mode, and antenna. A 20-button keypad permits one-button selection of any preset; you can also step through the presets or invoke the preset scan from the remote. Other buttons adjust the level of the variable output and engage the interstation muting. This last control, which is available on the front panel as well, is entirely independent of tuning mode—including the APR. In many other models it is tied to other functions (typically, the mono/auto-stereo switching) in a way that can be annoying under some circumstances.

The APR works the way a knowledgeable user would in applying the many options built into the tuner. That is, it assumes the best-quality (high-sensitivity, wide-IF-bandwidth) settings and alters them only when it discovers a specific reason to do so. Since I couldn't significantly improve on its choices, I am satisfied that it works very well indeed. APR presumably is responsible for the excellent reception on stations I usually consider to be merely good. If so, it explains why that sonic excellence isn't altogether confirmed by the lab's measurements. Sensitivity and capture ratio, in particular, aren't as spectacular as you might expect at this level of both price and technology. It could be that we have approached so close to the theoretical limits of FM reception with such per-

formance figures that only such advances as the T-G10's APR system can achieve distinctly audible improvements in perceived sonic quality.

You must take care in reading the unusually copious data for this model, occasioned by its exceptional range of features. In the wideband mode, for instance, alternate-channel selectivity would be rated poor if this were a conventional model. But when a situation arises requiring better selectivity, the APR automatically changes IF bandwidth. So, while the measured figure is poor for situations requiring greater selectivity, it is irrelevant for those situations. When a strong neighboring station appears, the result is not interference (as implied by the low selectivity figure), but a slight increase in distortion (as shown in the THD+N figures), occasioned by the APR switching to a narrower, higher-selectivity IF bandwidth. At the very worst, the data represent good performance. For the record, however, I must add that the A antenna input of our test sample behaved erratically and prompted use of the B antenna for all of the measurements. In a fully functional sample, the A antenna should behave identically.

An important part of any model this complex is the user's manual. This one is far better than many others in the clarity and directness of its organization and location, but it is written strictly for those who need it most: users who aren't technically inclined and who might be confused or annoyed by technical explanations. Granted that the APR can take care of the technology for such a user by automating relatively abstruse adjustments. But I think the techie user (say, a chief engineer who wants to monitor his own FM station) deserves more. Onkyo should consider adding a hard-fact appendix to supplement the "easy" explanations. Only the multipath monitoring is treated to anything even approaching this, and it, too, is inadequately documented.

The last few years have not been a vintage era for FM tuners, though we have encountered a few impressive models. None of them is more thoroughgoing in pursuit of optimum tuning parameters than the T-G10, which is an engrossing product to review and audibly superior to listen to. If you can come to terms with the hefty price, you won't find anything else with this extreme flexibility of adjustments, let alone with this degree of automation making that flexibility easy to use. It is a one-of-a-kind prodigy, and I doubt that anything comparable will come along for a long time.

Robert Long

Audio Concepts G-2 Loudspeaker

Audio Concepts, as you may already be aware, makes and sells loudspeaker kits. The present product, however, isn't a kit; it is a fully finished version of the G-2 system, sold exclusively through the Crutchfield catalog. The kit versions, which are sold only by Audio Concepts itself, should deliver comparable sound if assembled correctly, but any value judgments in the following properly apply to the finished version we tested.

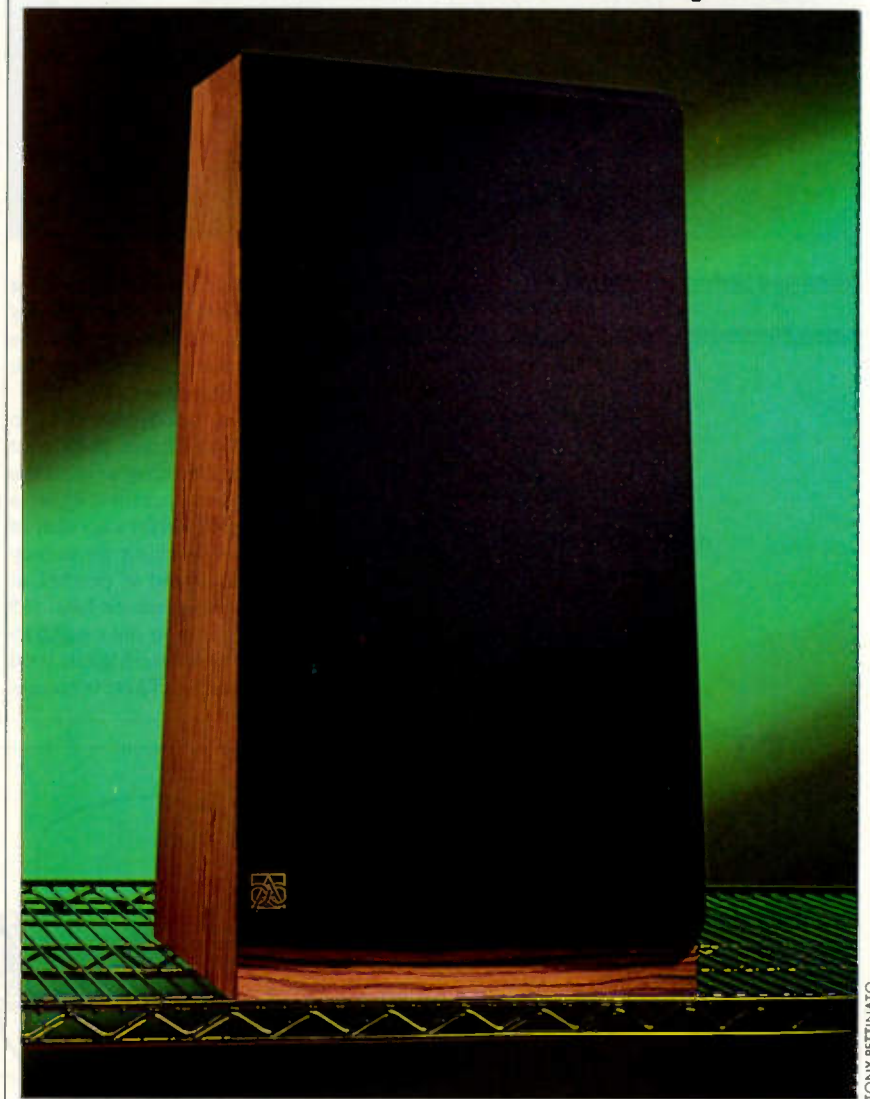
The G-2 is basically a floor-standing speaker (though Audio Concepts suggests that it can be used on stands as high as 12 inches) with a slanting front panel that aims the tweeter upward and keeps voice coils of the three drivers in roughly the same vertical plane, in the interests of uniform phase response. The sides and top are finished in oak veneer; the baffle is covered by a black stretch grille on a removable, beveled wood frame.

All three drivers are mounted on the central vertical axis of the baffle. Toward the top is a 1-inch aluminum-dome ferrofluid-treated tweeter surrounded by foam damping material that forms a sort of collar on the baffle and is probably intended to control diffraction. Below it is a 4-inch midrange driver, which is mounted in its own internal subenclosure. Toward the bottom is a 10-inch woofer with a textured polypropylene cone diaphragm. The bass enclosure is entirely sealed, but three small pressure-relief channels reach in from the back panel and are compliantly sealed from the bass chamber. The intent, according to the manufacturer, is to keep transients clean—not to extend woofer response. Also recessed into the back panel, with a bevel around the recess that makes them exceptionally easy to get at, are a color-coded pair of multiway binding posts for the amplifier leads.

The nominal crossover frequencies are at 900 Hz and 6 kHz. The near-field measurements from Diversified Science Laboratories suggest considerable overlap in the lower crossover region, a peak in midrange output near 2 kHz, and rapid rolloff of the midrange driver short of the higher crossover frequency. The overall measurements shown in the graph were made with the speaker near the backup wall and set on the floor. The 2-kHz prominence remains in these measurements—and continued to do so when the lab moved the speaker out away from the wall. Neither this prominence nor the dips near the two crossovers are at all severe: On-axis response through these ranges stays within about $\pm 3\%$ dB. The greatest departure from the assumed 0-dB music-band average is,

in fact, in the midbass, where the on-axis curve rises to $+3\%$ dB. The spread off-axis is only a little broader.

Notably absent from these curves is the 300-Hz dip that we commonly associate with floor reflection. The ability to control this property is an important potential advantage of a floor-standing design, because the relationship between



TONY PETTINATO

the woofer and the floor is fixed, whereas the placement of a speaker intended for use on a stand or bookshelf is at the mercy of the user. Still, Audio Concepts believes that using a low stand with the G-2 does deliver tighter bass and crisper imaging. The listening tests confirmed this, though the difference is not very great.

Not so the difference between wall and free-standing placement. When the lab moved the speaker 37 inches into the room, about an octave was shorn from the bottom end of the response curves. ▶

Dimensions: 14½ by 28 inches (front), 12½ inches deep at base plus clearance for grille.

Price: Assembled, \$599 per pair, shipping from Crutchfield included. Two kit versions are available direct from Audio Concepts: a full version, in either oak or walnut, costing \$470 per pair plus shipping, and a parts kit with no enclosure woodwork, costing \$240 per pair plus shipping.

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

Manufacturer: Audio Concepts, La Crosse, Wis. 54601.

U.S. Distributor: Crutchfield Corp., 1 Crutchfield Park, Charlottesville, Va. 22906.

Test Reports

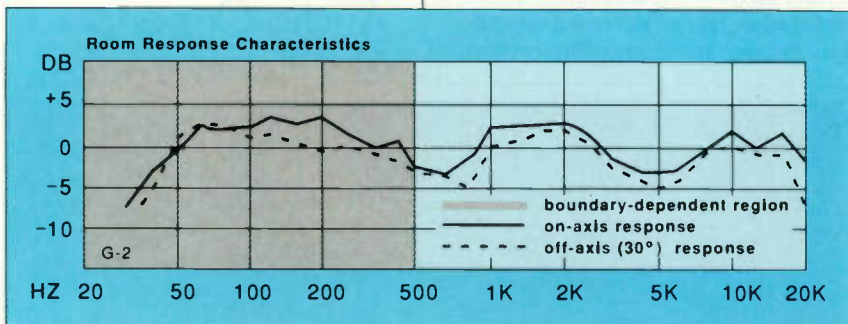
This, in conjunction with the response prominence in the 2-kHz region, yields a distinctly bright tonal balance with the speakers out in the room. On some music the effect sounds brilliant; on other fare (particularly low violin or viola tones)

gestion of imminent failure in this test or that with 300-Hz pulses, however, which often is the case with smaller speakers. The pulse test showed the speakers accepting the full output of the test amplifier (equivalent to 28.1 dBW, or 648 watts, into 8 ohms) to deliver a calculated peak sound-pressure level of 113.6 dB. The dynamic range thus is quite satisfactory, and the sensitivity is reasonably high for an acoustic suspension system.

Impedance is rated at 8 ohms, and the speaker actually should be an exceptionally easy load for typical amplifiers to drive, even when speaker pairs are paralleled. The impedance curve is unusually even, never rising above 21 ohms (at bass resonance, near 45 Hz) or falling below 5 ohms (near 2 kHz). Moreover, the curve is almost flat at between 7 and 8 ohms from 80 Hz to 1 kHz, where the bulk of the energy lies in music. Measured average impedance in the music band therefore is very close to the rating.

For its budget price, the G-2 is a very good speaker. As a floor-standing model, it has the advantage that it can be designed for its intended placement, and its size gives the designer elbow room to broaden both the frequency range and the dynamic range compared to a smaller and possibly more expensive speaker. There are some truly dreadful speakers in this size/price range. The G-2 doesn't sound like any of them, to its and your advantage.

Robert Long



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

85 1/2 dB SPL

Average Impedance (250 Hz to 6 kHz) 8.1 ohms

the sound might fairly be described as a touch "nasty." Most listeners probably will prefer to keep the speaker near the wall. In either position, however, the sound is basically quite smooth.

Imaging is very good—thanks, no doubt, to the vertical driver placement and the antidiffraction collar around the tweeters. Distortion performance is good, but not exceptional for a speaker of this size. Over the working frequency range, it averages around 1/2 percent at the lowest test sound-pressure level (85 dB SPL) and creeps up to the neighborhood of 2 percent before the highest level (100 dB SPL) is reached. There is no sug-



"NOW WATCH DAD JUMP WHEN I POINT THE REMOTE CONTROL AT HIS CORDLESS HEADPHONES..."



The CD Bit Wars

What are those extra bits for anyway?

BY GORDON BROCKHOUSE

In the last year, several manufacturers have introduced CD players with 18-bit digital-to-analog conversion. Now the bit wars are heating up, with 20-bit players on the market and 22- and 24-bit models on the horizon. Attractive (and promotable) as these machines may be, the escalating bit battles don't always make much sense. One claim is that the new machines offer "improved resolution." But audio information is encoded on Compact Discs and DAT as 16-bit binary numbers. Can an 18-bit digital-to-analog converter (DAC) actually resolve more information from a 16-bit source than a 16-bit DAC? The answer is an unequivocal "It depends." To understand why, you need to know a little about how audio is stored in digital media.

During recording, a numerical "snapshot" is taken of the audio signal 44,100 times per second. Each snapshot is stored as a 16-bit binary number representing the amplitude of the signal at the moment the snapshot was taken. With a 16-bit quantization scheme, 65,536 different numbers are available to describe the signal. To borrow an analogy from HIGH FIDELITY technical editor David Ranada, you can

think of the scheme as a ruler with 65,535 divisions, each division corresponding to a specific signal level. (If you think about it a bit, you'll realize there is one less division than there are available numbers: A 12-inch ruler has 12 divisions but 13 numbers, counting 0 inches). With 16-bit digital audio, the highest available value—a +32,767, or in "2's complement" binary notation as stored on a CD, 01111111 11111111—represents the highest positive amplitude that can be encoded by the system. The lowest negative amplitude is -32,768 decimal, or 10000000 00000000 in 2's-complement binary.

The left-most, or most-significant bit (MSB) in 2's-complement notation, is called the sign bit and describes the polarity of the signal (0 for positive, 1 for negative). Each subsequent bit to the right describes the signal in increasingly precise terms. The bits are like markings on a measuring stick for meters, decimeters, centimeters, millimeters, etc., except that each additional bit represents a twofold rather than tenfold increase in precision. The right-most, or least-significant bit (LSB), is the smallest signal change that can be encoded (it represents the smallest

The CD Bit Wars



Onkyo's DX-7500 (above), and Mitsubishi's M-C5100 (right)



division on the ruler) but not, it must be emphasized, the smallest signal that can be successfully recorded by a correctly operating 16-bit digital-audio system (and explaining that would require a whole separate article).

BACK IN THE REAL WORLD . . .

The heart of any digital playback system is the digital-to-analog conversion stage, and that's where problems unique to digital audio can occur. If every component inside a DAC performs exactly as expected, its output will produce a series of amplitude steps that correspond exactly to the recorded data. In practice, the values of a DAC's internal resistors and other components are not always exactly on-spec. Moreover, they're subject to thermal and other stresses that may change the circuit's performance over time. These variations in performance cause the circuit to produce signals different from those represented by the stored data.

The problem is most serious if the MSB isn't exactly on-spec. Around the zero crossing—where the signal changes polarity from negative to positive—the MSB and the lowest LSBs correspond to almost all the signal content. It is most crucial for the MSB to track the lowest LSBs in this region—the errors the MSB introduces should be kept smaller than $\frac{1}{2}$ LSB—and this is difficult to do. While small MSB errors will be masked by loud signals, with low-level signals there's no place for MSB nonlinearities to hide. At high signal levels, nonlinearities in the LSBs account for a very small portion of the total output. Consequently, a DAC manufacturer's primary objective is to assure linearity of the higher bits, especially the MSB. Linearity in the lower bits is less important (it's much more difficult for the MSBs to come out within $\frac{1}{2}$ LSB of where they should be than it is for the LSBs to do so).

Let's extend editor Ranada's ruler analogy. Suppose you and a friend are using two different tape measures, both cali-

brated in meters, to build a house. Your measuring tape is accurate; your friend's is not. If the meter-spaced markings on your friend's ruler have a 10-percent error, your whole house is going to be obviously out of kilter. If the meter markings are accurate, but the decimeter markings are off, the main structure may turn out okay, but doors and windows may look crooked. If the decimeter markings, but not the centimeter markings, are accurate, smaller details like molding may be poorly executed. But if inaccuracies are confined to millimeter markings, the construction errors they introduce will be hard to detect with the naked eye. Similarly, higher-bit DAC errors affect practically everything; lower-bit nonlinearities affect only fine—sometimes inaudible—details.

The MSB-accuracy problem is exacerbated by the principles of operation of most DACs. Most of the time, only a few bits will change value from one sampling period to the next, so only a few of the DAC's internal switches are turned on or off. But at zero crossing, all the bits change value—from 11111111 11111111 (-1 decimal) to 00000000 00000000 (0 decimal), or vice versa—and all the switches are thrown at once. This sudden change introduces thermal and other on-chip disruptions that may momentarily alter the DAC's performance.

THE \$65,536 QUESTION

Are any of these nonlinearities audible? Under certain conditions, yes. In a paper presented at a 1988 convention of the Audio Engineering Society (AES), Professors Stanley Lipshitz and John Vanderkooy of the University of Waterloo in Waterloo, Ont., reported on tests of 17 CD players borrowed from friends and retail stores. Many exhibited MSB glitches, the worst being as large as 8.5 LSB!

Lipshitz and Vanderkooy performed electrical tests using the CBS CD-1 test disc. The DAC nonlinearities were clearly visible in traces and distortion spectra of

low-level (-70.31-, -80.77-, and -90.31-dB) 997-Hz sine waves. A more important finding was that these problems are not only visible on an oscilloscope screen, but can be audible as well. Distortion on the low-level sine waves could be heard (though such minute signals required considerable amplification). Comment Lipshitz and Vanderkooy: "... it is desirable to apply to digital audio systems the same demand as is applied to other components—namely that they display no audible distortions on pure tones at any levels. This goal is far from being met by most of the CD players at all price levels on the market."

For audio consumers however, the \$2¹⁶ question (we're dealing in binary arithmetic, remember) is whether these problems are audible with music. To settle that question, the two professors performed electrical and listening tests on a player whose MSB output could be adjusted with a trim pot. Tests were performed with the MSB adjusted properly, and misadjusted by -8 LSB, -2 LSB, +8 LSB, and +16 LSB.

"Quiet piano music turned out to be the most revealing of converter errors at low levels, although French horn also displayed some audible artifacts," the authors state. "Glitches of more than 4 LSB were indeed audible on musical material, and over 8 LSB were clearly audible on suitably chosen passages at normal or only slightly elevated levels. The 16-bit glitch was quite unacceptable. Positive glitches (in which the output is larger than it should be) were seemingly more audible than negative ones. These simple experiments clearly indicate the desirability of holding low-level converter errors to tolerances on the order of an LSB." This, unfortunately, is difficult to do.

ATTEMPTS AT SOLUTIONS

One of the rationales behind the present war of the bits is to reduce the effects of these converter nonlinearities. The purpose of 18-bit (and greater) digital-to-ana-

Manufacturer/Model	Suggested Retail Price	Converter Word Length (Bits)	Converter Type ¹	Digital Filter Resampling Rate	Remote ²	Programmable Selections	Outputs ³	S/N Ratio (dB)	THD (%)	Frequency Response (Hz-kHz ± dB)	Remarks
Carver											
TL-3300	\$700	18	L	8	I	22	F	100	.002	5-20 ± 0.2	Digital Time Lens for ambience and balance
Denon											
DCD-1420	\$600	20	L	8	I	20	F, V, H, C, O	108	.003	2-20	
DCD-1520	\$750	20	L	8	I	20	F, V, H, C, O	115	.0025	2-20	Time search function
DCD-3520	\$1,500	20	L	8	I	20	F, V, H, C, O	118	.0015	2-20	Balanced outputs
DCM-777	\$900	20	L	8	I	32	F, V, H, C, O	106	.003	4-20	Six-disc changer
Esoteric											
P-1/D-1	\$5,995	18	L	4	I	40	F, V, C, O	100	.0015	0-20 ± 0.5	Separate tube analog and digital chassis
Melos Audio											
CD-T8	\$2,295	18	L	8	I	20	F, C, O	90	.07	20-20 ± 0.2	
Mitsubishi											
M-C5100	\$600	18	L	8	I	20	F, H, O	105	.004	4-20 ± 0.5	
Onkyo											
DX-5500	\$600	18	L	4	I	20	F, V, H, C, O	96	.003	5-20	
DX-7500	\$700	18	L	8	I	20	F, V, H, C, O	110	.0015	2-20	
DX-G10	\$2,500	18	L	8	I	20	F, V, H, C, O	110	.0015	2-20	
Pioneer											
PD-91	\$1,300	18	L	8	I	24	F, V, H, C, O	114	.0015	2-20 ± 0.3	
Sony											
CDP-970	\$500	18	L	8	I	20	F, V, H, O	104	.003	2-20 ± 0.3	With noise shaping
CDP-507ESD	\$600	16	M, S	8	I	20	F, V, H, C, O	110	.0025	2-20 ± 0.3	
CDP-508ESD	\$550	18	L	8	I	20	F, V, H, C, O	115	.0015	2-20 ± 0.3	With noise shaping and digital sync
CDP-608ESD	\$1,000	18	L	8	I	20	F, V, H, C, O	115	.0015	2-20 ± 0.3	With noise shaping and digital sync
CDP-X7ESD	\$2,000	18	L	8	I	20	F, V, H, C, O	115	.0015	2-20 ± 0.3	With noise shaping and digital sync
CDP-C15ESD	\$800	18	L	8	I	19x90	F, V, H, C, O	115	.0015	2-20 ± 0.3	Ten-disc magazine changer
CDP-R1/DAS-R1	\$8,000	16	M, S	8	I	20	F, V, C, O	110	.0025	10-20 ± 0.5	Two-box reference player
Stax											
CDP Quattro II	\$3,499	18	L	8	I	20	F, V, H,	118	.0015	0-20 ± 0.1	Includes separate power supplies
Technics											
SL-P222	\$300	18	L	4	I	20	F, H, C, O	96	.005	2-20 ± 0.5	Edit guide
SL-P350	\$330	16	S	4	I	32	F, H, C,	103	.005	2-20 ± 0.3	Edit guide; auto peak search
SL-P555	\$410	18	L	4	I	32	F, H, C, O	110	.0035	2-20 ± 0.3	Peak level search; edit guide; shuttle search
SL-P770	\$680	16	M, S	4	I	32	F, H, C, O	112	.003	2-20 ± 0.3	Search dial
SL-P999	\$600	20	M, L	8	I	32	H, C, O	113	.0023	2-20 ± 0.3	Search dial; auto peak search
SL-P1300	\$2,000	16	M, S	8	I	20	F, H, C, O	112	.003	2-20 ± 0.2	Pitch control, auto cue
Yamaha											
CDX-910U	\$699	16	S	8	I	24	V, C, O	118	.003	2-20 ± 0.3	20-bit digital volume control; direct output from DAC
CDX-1110U	\$1,199	16	S	8	I	24	V, C, O	118	.002	2-20 ± 0.3	(As above)
CDX-2000	\$1,499	16	S	8	I	24	V, H, C, O	118	.002	2-20 ± 0.3	
CDV-1600	\$899	18	L	8	I	15	F, H, O,	110	.0035	5-20 ± 0.3	Combi player; takes both audio and video discs

¹L = linear; S = bit-shifting; M = multiple

²I = included; O = optional; N = not available

³F = fixed analog; V = variable analog; H = headphone; C = coaxial digital; O = fiber-optic digital

log conversion, manufacturers say, is to make better use of the 16 bits of data on the disc than 16-bit DACs can. In theory at least, this makes some sense.

The players listed in the accompanying chart all use data generated by a digital filter not only to perform the necessary task of removing ultrasonic artifacts generated by the data-conversion process, but also to improve linearity and to reduce noise. Digital filters generate new data by performing mathematical operations on stored data. When you multiply a two-digit number by another two-digit number, the result is always a number with more than two digits. Similarly, even though they work with 16-bit binary numbers, digital filters generate numbers with more than 16 bits. Contrary to what illustrations in product literature might lead you to believe, the extra bits produced by the filters or 18-bit DACs themselves *do not* provide additional resolution. In the CD and DAT systems, the resolution is ultimately limited by the 16-bit recording process. But the extra bits can be used to make a DAC more linear and to reduce noise introduced by the arithmetic of the digital-filter processing itself. Let's look at some of the approaches taken by different manufacturers.

BIT-SHIFTING

Yamaha started the bit race when it launched its Hi-Bit CD player line in mid-1987. Yamaha's current Hi-Bit models employ 16-bit DACs but use a technique called "bit-shifting" to improve their performance. As 18-bit data "words" emerge from the digital filter, their level is checked. If the level of the signal is less than -12 dB, the two bits below the sign bit in the 18-bit word are dropped and the lower 15 are loaded into the DAC for conversion (the sign bit is retained in the MSB spot). If the signal is between -12 and -6 dB, the bit below the MSB is dropped and the remaining bits loaded into the DAC. With signals of levels greater than -6 dB, bits 1 through 16 are routed to the DAC.

For signals below -12 dB, it's as if the data were being looked at through a four-power (2-bit) magnifying glass. Imagine trying to measure a very small object with a conventional ruler. If you magnified the object, and held your ruler in front of the glass in a way that let you precisely relate the magnified image to the markings on the ruler, you would be able to measure the object more precisely than if you relied

on bare eyesight. Of course, you'd have to divide the indicated measurement by the magnification factor.

That's exactly what happens with bit-shifting. Conversion of signals below -12 dB is performed using a region of the DAC output scale that is more linear than the region that would be employed without bit-shifting. The main benefits of bit-shifting, however, result from the circuit's compensation for its "magnification factor." With a two-bit shift, the DAC's output is 12 dB too loud; with a 1-bit shift, it's 6 dB too high. To compensate, an attenuation stage following the DAC reduces its output by 12 dB (a factor of 0.25), or 6 dB following a 1-bit shift. This attenuation also reduces distortion, including MSB errors. A 2-LSB error becomes $\frac{1}{2}$ LSB.

Critics of Yamaha's bit-shifting approach maintain that switching noise and gain-matching errors may occur when the attenuation stage switches from full to one-half to one-quarter gain and back again. Yamaha has two responses. First, "sample-and-hold" circuits following the DAC eliminate these glitches by allowing the circuit to settle when gain changes occur. Moreover, the company says, those changes are rare. Catastrophic distortion occurs when digital systems overload, and to avoid this, recording engineers typically set 0 VU at 10 to 15 dB below maximum level to allow headroom for transients. Their recordings thus only rarely reach above -6 dB, says Yamaha. Other observers have found discs whose output frequently does reach 0 dB, however.

A variation on the Hi-Bit approach is incorporated into some Technics CD players, and is used by Denon and Technics in DAC-equipped integrated amps. In addition to the bit-shifting system, these products employ two DACs for each channel: one for the negative half of the signal and one for the positive half. A processor following the digital filter detects the polarity and level of the signal, divides it into positive and negative streams, then sends it to the appropriate DAC. Outputs of the two DACs are subtracted to obtain the final analog signal. This approach reduces zero-crossing nonlinearity considerably. Technics insists that the custom LSI chip it uses to control four-DAC operation adequately controls switching and gain-matching problems.

At a 1987 AES Convention, the Burr-Brown Corporation of Tucson, Ariz., announced it had developed an 18-bit DAC.



Carver's TL-3300 (above), and Pioneer's PD-91 (below)



Players using the chip began appearing in early 1988. Currently, models based on the Burr-Brown chip are available from Mitsubishi, Onkyo, Pioneer, Sony, and others. Massachusetts-based Analog Devices has started producing 18-bit converter chips as well (see last month's "Bits and Pieces").

LINEAR CONVERSION

Unlike the bit-shifting approaches, the Burr-Brown chip performs true 18-bit conversion rather than a bit-shift/attenuation conversion. Using an accurate 18-bit DAC to convert data is like using a more precise ruler to measure an object. If your ruler is calibrated in meters, decimeters, and centimeters, you can accurately measure the size of an object only to the centimeter. With a ruler calibrated in millimeters, however, you'd be able to definitely determine the size down to millimeters—a tenfold increase in precision. And for the ruler manufacturer to accommodate the finer calibration, he has to make sure larger divisions are accurate. Similarly, output of an 18-bit DAC might be nonlinear by more than one LSB; but these are 18-bit LSBs and are one-quarter the size of a 16-bit LSB.

As with some of its 16-bit designs,

The CD Bit Wars



Burr-Brown provides a trim-pot adjustment for the MSB. On some DAC models, the three most significant bits can be trimmed. The company says that actual results from manufacturing lots show unadjusted linearity within one 17-bit LSB: 0.5 of a 16-bit LSB. Heat testing designed to simulate 32,000 hours of actual use showed nonlinearity rising to one 16-bit LSB, the limit Lipshitz and Vanderkooy call for in their paper. As David Ranada has noted, the Burr-Brown device will achieve this accuracy whether or not the extra bits are connected (that is, even if the chip is used simply as a high-accuracy 16-bit DAC). But connecting the lowest two bits to a digital filter output can reduce noise added by the computational process, since the recalculated data will thus be rounded off (or, worst case, truncated) at the 18th bit, not the 16th. However, the actual noise level of a player reproducing music will again be limited by the 16-bit recording.

ESCALATION

The first true 18-bit players were expensive, but prices are beginning to fall. Already, machines are available in the \$500-\$600 range. With the proliferation of new models, especially ones that have

converters of more than 18-bit precision, sorting through the CD manufacturers' claims and counterclaims isn't going to get any easier. Last fall, Denon introduced two players with 20-bit conversion. To the Burr-Brown DAC, Denon adds discrete circuitry for converting two additional bits from its 20-bit digital filter. Claimed benefits include further reduction of nonlinearity and "requantization" noise.

This spring, Technics will introduce a four-DAC player with 20-bit linear conversion. As with previous designs, the player is said to eliminate nonlinearities at the zero crossing by its use of separate DACs for the positive and negative signals. The Technics 20-bit DAC is also said to improve linearity overall and reduce noise. What's more, at the Japan Audio Fair in October 1988, Yamaha showed a player that shifts four bits through the Burr-Brown 18-bit decoder, giving 22-bit performance with low-level signals. By shifting four bits, the player achieves a 24-dB reduction in digital-filter noise and DAC distortion compared to players using 18-bit linear conversion, but at the cost of further potential gain-matching and switching-noise problems. Yamaha has not yet announced plans for North American introduction. The race will probably continue to escalate. According to Len Schneider, national product and advertising manager for Onkyo U.S.A. Corporation, a 24-bit linear converter is "very close to manufacture."

And during this year, the bit wars will take a new twist with the introduction of 1-bit converters developed by two groups: Philips Electronics and Matsushita (Technics), the latter working with the Nippon Telephone and Telegraph Company. The Philips chip uses 256-times oversampling with "noise shaping" to produce a data stream that is converted by changing the DAC output one 256-bit-equivalent LSB at a time. [A more detailed explanation of 1-bit converters for CD players will appear in a future issue.—Ed.] Philips has already licensed its "Bitstream" technology to one other manufacturer (said to be a major Japanese force in the CD field). And at the Consumer Electronics Show this January, Sansui showed a player using the Matsushita/NT&T chip.

At some point, however, one begins to wonder whether the bit wars are being driven more by marketing than sonic concerns. There is no doubt that converter linearity is a worthwhile goal and that proper

(that is, reduced nonlinearity) implementation of 18-bit conversion contributes to that goal. But at some point, the race stops making sense and begins to look like technological overkill. Indeed, the designer of Burr-Brown's 18-bit chips, Joel Halbert, notes that specsmanship games may lead to a decline in sound quality. Depending on how it's implemented, a 24-bit DAC may produce distortion as bad as that from 12- or 14-bit devices, he says.

Manufacturers themselves acknowledge that marketing concerns have contributed to the bit race. Comments Onkyo's Schneider: "Advertising and marketing claims have run roughshod over musical values." Certainly, the bit race has been accompanied by a good deal of hyperbole.

In fact, the performance of a well-executed 16-bit design in characteristics like low-level linearity can be comparable to that of many 18-bit players. Take, for example, the 16-bit, four-times oversampling (and \$1,895) Revox B-226S [test report, January 1989], which is the most linear player this magazine has yet measured. Product execution—in every part of the player, including the converter—is just as important as the basic design. And execution isn't always what it should be, as Lipshitz and Vanderkooy point out in their paper.

Several players they tested had adjustable DACs. But most were miscalibrated—some severely. In some players, the trim pots were in center position, suggesting, the authors state, that the pots weren't factory-adjusted. The concerned manufacturers, however, insist that the converters are adjusted at the factory. But factory adjustment should not be performed, as it sometimes is, with full-scale tones and distortion meters. For best audible results, the tests should be performed at the -70-dB level and lower.

So what does one make of all this confusion? In a handout distributed at the launch of its 20-bit players, Denon America suggested: "Rather than basing a purchase on the sheer number of bits, consumers are better off considering the player's overall design, sound quality, product reviews, and the advice of *qualified* [italics added] dealer salespeople." Sensible advice, all of it. □

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



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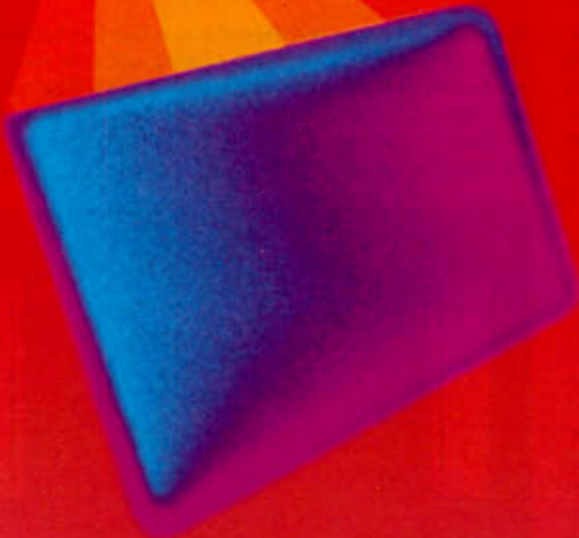
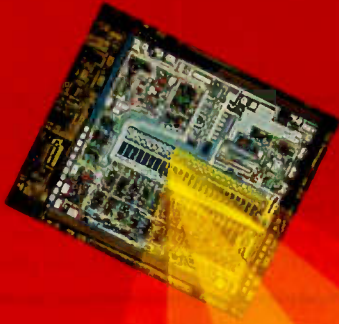
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What hath the FCC wrought? Aspects of HDTV

BY DAVID RANADA

The American system for high-definition television (HDTV) was born on September 1, 1988. On that date, the Federal Communications Commission issued a ruling (specifically, a "Tentative Decision and Further Notice of Inquiry") laying out the ground rules for further development of an HDTV broadcasting system for the United States. As HDTV designers from other countries looked on incredulously, the FCC declared that "any spectrum capacity needed for [a] broadcast ATV [advanced television] system will be obtained from the spectrum now allocated to broadcast television." But the clincher—setting the American HDTV system apart from any other in the world—was this: "Existing service to viewers utilizing NTSC [standard television] receivers must be continued irrespective of the actual manner in which ATV services are delivered," a feat to be accomplished "either by transmitting ATV signals that can be received directly by NTSC receivers or by simulcasting NTSC and incompatible ATV signals on separate channels."

Whatever else you may think about them—and many, primarily overseas interests don't like them—the FCC decisions might have been expected, since they fall right in line with the traditions of American broadcasting and of the American media in general. As with the transi-

tion from black-and-white to color TV, compatibility is being held paramount. (Compatibility to the FCC means that "an ATV signal can be received on conventional NTSC reception equipment without additional hardware [and] with quality not significantly degraded from that displayed when a conventional NTSC signal is received.") The ruling also intends to promote diversity in programming, as have a series of governmental rulings on newspaper and radio/TV station ownership. A greater understanding of how the FCC was driven to these important decisions starts with the answer to a basic question.

WHAT IS HDTV?

There are three levels of advanced television technology currently under development worldwide. In order of increasing technical sophistication and picture quality, they are:

IDTV (improved-definition TV). This is the umbrella term for home televisions with improved picture quality obtained mainly from the use of progressive (non-interlaced) scanning techniques and from picture processing to remove noise and artifacts caused by the interference between luminance (brightness) and chrominance (color) signals (see Carleton Sarver's "Clearing the Picture," November 1988).

Noninterlaced technology was commercially introduced by Toshiba, and other IDTV variations are now available from Philips, Sony, and others. Since IDTV is basically a receiver-only technology, it requires no changes or modifications to studio-production or TV-transmitter equipment.

EDTV (extended- or enhanced-definition TV). These technologies—and there are several proposed EDTV schemes—do require new studio equipment in order to obtain further picture-quality improvements while maintaining compatibility with NTSC receivers. EDTV transmissions can be different from standard TV signals since certain EDTV techniques take advantage of the unused "space" in an NTSC signal to transmit additional video information. Normal NTSC sets thus will receive a standard picture, while EDTV sets will display a picture with additionally reduced luminance/chrominance interference, as well as improved sharpness and other characteristics. Advanced EDTV systems might also eventually provide a wider picture and better audio quality.

HDTV (high-definition TV). Since extensions to EDTV technology can produce an HDTV-like picture, the line between HDTV and EDTV is very blurry. But for some time there have been two minimum-performance criteria that must be met in



order for a system to be considered full HDTV. Although the FCC ruling sort of lumps EDTV and HDTV together as a single ATV category, the Commission speaks of ATV with an HDTV slant. Thus, as the FCC ruling puts it, an ATV (HDTV) system must provide "television

pictures with clarity and color approaching that of 35mm film and sound equivalent to that of Compact Discs." More specifically, an HDTV picture will be wider than normal (with a movielike width-to-height "aspect ratio" of 16:9 compared with standard TV's 12:9), have much

greater detail (there will be more than 1,000 scan lines per frame, and overall resolution will be several times that of standard TV), and will be accompanied by at least two channels of very high quality audio—possibly even digitally encoded (see "The Art of HDTV," below). At present,

The Art of HDTV

Only rarely do any of the technological, economic, or political debates now surrounding advanced television systems mention what I call the art of HDTV: the use of the new medium for expressive purposes. Movie and TV directors experimenting with HDTV production have undoubtedly run into some of these aesthetic issues already. But the FCC's compatibility-oriented stance requires a close look at one of them here.

Aspect ratio is a measure of the proportions of an image—whether on a TV or movie screen or on film. It is also the most important technical consideration influencing the cinematographer's art, since the "frame" of the screen determines the composition of each shot. The aspect ratio for standard (non-HDTV) television the world over is 4:3, or 12:9 (width to height). It originates from the ratio for sound movies set decades ago and is the same aspect ratio used by Instamatic 110 cameras (a 35mm still camera shoots a wider 13.5:9). Most modern movies are filmed and projected in more spacious formats: In the United States, flat-screen theatrical projection ranges from 15:9 to 17:9, although VistaVision used 18:9 and CinemaScope's is 21:9. To the average television viewer, the most immediately striking trait of any HDTV set will be its aspect ratio, which for nearly all the proposed and already-in-use HDTV systems is a wide 16:9.

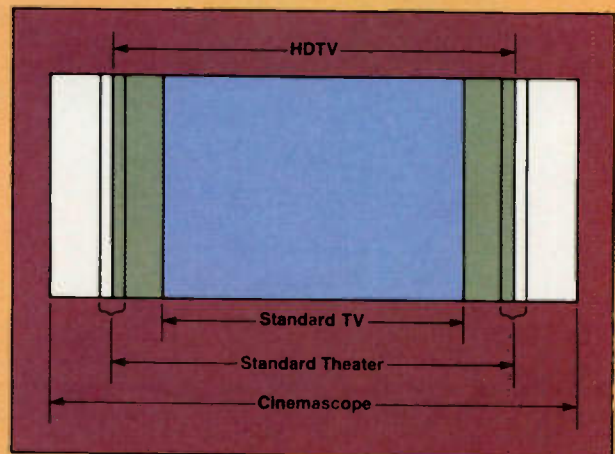
As the accompanying figure shows, this aspect ratio will be of tremendous benefit to the broadcasting of movies. Wide-screen movies have always needed special treatment if they were to be broadcast via an NTSC channel: Any important elements on the extreme sides of the image would be cut off unless special measures were taken. There have been two approaches to this problem. The first is "letterboxing," and its appearance is characterized by a smaller-than-normal image bounded by black bands on the top and bottom of the screen. Although the small image preserves the aspect ratio of the original movie, letterboxing is distracting to many viewers.

The more common approach to aspect-ratio adjustment is therefore "pan and scan." During the film-to-video transfer process, this technique aims the TV camera picking up the movie image over those parts of the image deemed most important to follow. Panning and scanning introduces visual elements (pans and edits) not in the original image. Because of HDTV's wide screen, with most movies broadcast over an HDTV system neither letterboxing nor panning and scanning will be necessary.

Even simple "talking head" shows can take advantage of a wider image. Two persons sitting next to each other form too wide an image to be comfortably accommodated on a 12:9 NTSC screen. They either have to sit unnaturally close together or one person must be shown at a time. HDTV's wider screen will enable more normal conversations: Face-to-face confrontations won't have to be also nose-to-nose.

Sports coverage can also benefit from the 16:9 aspect ratio,

especially horizontally oriented events like football games and many track and field contests (diving and pole vaulting may not be able to take full advantage of HDTV). The wide screen and high resolution of HDTV gives a tremendous sense of immediacy to the viewing experience and, somehow, increases the sensation of image depth—an illusion that can be used to



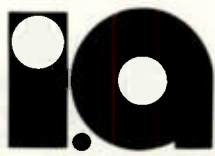
Alice Tope

great effect by a skilled sports-coverage director.

The FCC's insistence that any broadcast HDTV standard be viewable on normal 12:9 NTSC sets (though without most of the picture-quality enhancements of HDTV) undercuts to a considerable extent the advantage of HDTV's wider screen. Unless special provisions for panning and scanning are incorporated into the HDTV system—and not all proposed systems have them—productions destined for HDTV broadcast will have to be shot for NTSC, thus wasting the extra screen area on the sides.

Even if the selected HDTV system is capable of panning and scanning—meaning that the NTSC-compatible portion of the transmission will be panned and scanned, while the HDTV picture will undo the panning and scanning and show a true wide-screen image—live coverage of sports and other events may still not be able to take visual advantage of a wide screen. Panning and scanning cannot be automated, since it requires visual judgments as to what is important to show in an image. Fairly long and expensive video delay lines would be necessary to give a pan-and-scan operator time to make such decisions, thus detracting from the "live" nature of the event. Since such events are judged by many to be the type of programming that will make high-definition TV sets desirable to the consumer, anything that reduces HDTV "spectacularity" for the sake of compatibility (and the FCC ruling has the potential for doing precisely that) will also have the effect of making HDTV more difficult to sell—precisely the opposite of what the everybody, including the FCC, wants. D.R.

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there are quite a few proposed HDTV-broadcasting systems for this country, and it is still too early to describe any of them in detail. Besides, the man in the street will have very little say over which broadcasting system is finally selected. A few technical details on some of the crucial differences between studio and broadcast HDTV systems are described in "Lines and Fields," below.

In the present state of the video art, the amount of video information carried by an HDTV signal *cannot* be crammed into the frequency space allotted for NTSC signals. This basic characteristic of all HDTV systems is at the root of all the

socio-politico-economic fuss being made over HDTV in Washington (see the companion feature "Keeping the Rabbit Ears Alive," p. 51). If it were possible to achieve HDTV in an NTSC frequency space, many of the remaining HDTV engineering problems would have been solved some time ago, and, being a *fait accompli*, HDTV would not now be the subject of such intense governmental scrutiny.

Although difficult, finding room on a videodisc or videocassette for the extra video information is not impossible. For both of these media, an HDTV designer can trade off playing time for signal bandwidth, reducing the former to increase the

latter. Indeed, we may see videodisc and videotape products applying this principle long before HDTV is on the air. But this trade-off can't be made with over-the-air or cable transmissions. With these media, bandwidth is bandwidth and the only thing you can trade off to obtain it is picture quality or the maximum number of possible TV channels. This is the fundamental problem of HDTV and why the FCC is so deeply involved in it: Broadcasting it requires prodigious use of the radio spectrum, that most limited of natural resources (after all, there is only one). (For more technical details on frequency allo-

(Continued on page 56)

Lines and Fields

There are several important technical aspects to the selection of an HDTV broadcasting standard for the United States. The most important of these is whether the standard used for broadcasting will be in some way easily compatible with the HDTV systems used in studio production. This problem does not arise with NTSC television, since there is a common thread linking studio and transmitter operation: the NTSC composite-video signal. But the studio HDTV systems now in use at many video production houses are *not* directly compatible with NTSC broadcasting.

Specifically, the most popular studio standard now in use is referred to as the 1125/60 system; it has a picture with 1,125 interlaced scanning lines and a field rate of precisely 60 Hz. This system produces an extremely good picture, but if it were to be broadcast, it would require a bandwidth of 90 MHz *per channel*. Because this bandwidth is greater than that of all VHF TV stations combined, 1125/60 clearly is not NTSC-compatible. So, with the 1125/60 system as well as other studio standards, there has to be some signal-processing to make the studio output suitable for an NTSC-compatible HDTV transmitter (the kind now being required by the FCC).

But there are additional incompatibilities that make such transcoders expensive. The process is similar to digital audio's sampling-rate conversion from a 48-kHz professional tape to the 44.1-kHz consumer CD. Standard NTSC television can be characterized as a 525/59.94 system. The easy part of transcoding is the disparity in number of scanning lines—1,125 vs. 525—and this would be simplified if a studio HDTV standard of 1,050 lines were used. Half the lines would then go to the NTSC-compatible portion of the HDTV transmission, the other half to the HDTV "augmentation channel" that turns the NTSC portion into HDTV. The difficult part in transcoding is the small difference in field rates (60 vs. 59.94 Hz). To get these to match up requires a great deal of computer power applied to a digitized video signal. The closer the two field rates are, the more difficult it becomes to perform the transcoding process without visual artifacts: blurring, smearing, flashing of small details, etc. Fortunately, there have been proposals for HDTV systems that are NTSC-compatible and do not require complex transcoding from camera through to the home receiver.

D. R.

The Bandwidth/Interference Problem

A standard NTSC signal, the kind your TV shows, takes up 6 MHz of spectrum space when broadcast. Broadcast-TV stations are presently spaced 6 MHz apart in three large groups: the low VHF channels 2-6 (54 to 88 MHz), the high VHF channels 7-13 (174 to 216 MHz), and the UHF channels (14-68, 470 to 800 MHz). The gaps between the two VHF groups and between the high-VHF and UHF channels are filled with other broadcast "services." For example, FM radio (88 to 108 MHz) fits between TV channels 6 and 7.

Depending on the proposed broadcast system, an HDTV station will take up either one and a half or two NTSC channels for its signal (that is, 9 or 12 MHz of bandwidth). This has several extremely important implications:

- In metropolitan areas where there are already quite a few NTSC stations (such as New York City), there is simply no spectrum space available for terrestrial HDTV services unless unused UHF channels are utilized, new spectrum space is allocated (over the objection of other interests, such as mobile-phone services), or some existing NTSC stations are willing to sacrifice themselves for the good of the new medium (not very likely).
- If the signal power in an HDTV channel's augmentation channel is high enough—and this depends on the HDTV system used—the station may interfere with another HDTV or NTSC station covering the same frequencies in a nearby city. This gives rise to the so-called "taboo" channels, which cannot be assigned to HDTV because of such interference problems, and cuts down on the number of possible terrestrial HDTV stations.
- Simple arithmetic shows that if spectrum allocation is not changed, the maximum number of possible TV stations will decline as HDTV takes over. For example, if the VHF band were to go totally to 12-MHz HDTV transmission, there could only be six VHF stations (nine stations with 9-MHz HDTV) instead of the present twelve. This is the fly in the FCC's compatibility-over-all ointment: Compatibility with NTSC televisions will give everyone access to HDTV programming, but there will ultimately be less programming to see. Unless new spectrum space is allocated to it, along with outstanding picture and sound quality, HDTV might bring along a decided attenuation of the invigorating diversity that so vividly characterizes all of American broadcasting.

D. R.



HDTV: Keeping The Rabbit Ears Alive

Questions and answers on the
HDTV standard-setting procedure

BY ROBERT S. SCHWARTZ



Although HIGH FIDELITY's editors have asked me, a lawyer, for a map through the legal thicket surrounding HDTV, I begin with a medical analogy: America is today just a little bit pregnant with HDTV. Daily, it becomes more evident that something that can be called HDTV will be delivered. Unfortunately, our legal and regulatory systems' history of live births is not encouraging.

WHY ARE LAWYERS INVOLVED?

Blame (or credit) your local TV broadcaster and his affiliated network. Europe and Japan agree on nothing, except that it would be insanely impractical to implement HDTV through terrestrial broadcasting, with its limited bandwidth, scarce spectrum space, reception ghosting, and other technical problems; they will use satellites for HDTV broadcasts. By contrast, the only fundamental decision our FCC has made about HDTV so far is that it shall be implemented through *existing* terrestrial broadcast techniques, *without* changing the basic channel-allocation structure and *without* disturbing reception of the same programs in the conventional (NTSC) format for the foreseeable future. How to accomplish all this will be subject to much further study. The day after this FCC decision (published on Septem-

ber 1, last year), Maryland, Virginia, and Washington, D.C., dealerships for Mercedes and BMW were swamped by lobbyists and consultants.

IS THERE A POLITICAL ASPECT?

For readers too young to remember President John F. Kennedy's "Missile Gap," it was one of the last great national crises prior to HDTV. As a candidate, J.F.K. thought the Soviets were dangerously ahead in deploying intercontinental ballistic missiles. As President, Kennedy discovered that we ourselves were ahead. Now several members of Congress say that companies based in Japan and Europe are dangerously ahead in deploying HDTV. Therefore, HDTV may eventually become more a matter of trade and industrial policy than of engineering.

WHAT MUST BE DECIDED?

The only thing the U.S. government *must* decide is whether to mandate a single transmission standard for HDTV and, if so, what that standard should be. Public understanding of this upcoming decision has been obscured by confusion about the three separate technological areas in which one or more HDTV formats will be adopted. Working from the camera lens, these are:

PRODUCTION. At present, the only operational in-studio production format, developed in Japan and also now used in Hollywood, is the 1125/60 system. (For a brief description of what these numbers mean, see the article preceding this one: "Aspects of HDTV.") A few years ago, Europe purposely decided to promote a different production format (1250/50, based on the 50-Hz PAL frame rate used there). And late last year, NBC, with the apparent cooperation of ABC, proposed a 1050/59.94 production standard, although CBS also backs production in 1125/60.

In a sense, it doesn't matter how many production formats there are, because any production standard has to be converted to match the transmission standard. Even 1125/60 production would have to be converted for 1125/60 transmission. But if everyone used the same production format, the editing and interchange of programs would be greatly simplified.

TRANSMISSION. When you hear about FCC Commissioners studying competing HDTV "systems" and gnashing their teeth, the reference is probably to the task of their blessing a transmission system. Many in the industry define as HDTV any transmission standard that—after conversion from production, through transmission, and back to display—still offers the



viewer 35mm-film image quality and a wide screen. Anything less is ATV (Advanced Television). And just how many of the proposed systems have been proven, in the field, to offer true HDTV while fulfilling the FCC requirements for spectrum allocation and compatibility with NTSC? If you said zero, you're beginning to understand Washington.

DISPLAY. Technically, HDTV could be here next year from satellites, VCRs, cable, or fiber optics. But on what is anyone going to watch it? Any transmitted signal must be converted by a receiver to "baseband" video, just as the luminance and chrominance signals are ultimately extracted from an NTSC broadcast. Theoretically, without waiting for the FCC, equipment manufacturers could sell baseband HDTV monitors, and anyone offering HDTV by such alternative delivery media would supply a baseband converter. The FCC admits that it probably cannot regulate such devices (aside from preventing interference-causing spurious emissions) but has suggested darkly that they must be "friendly" to the eventual transmission format. For manufacturers, this poses a problem: How do you make friends with someone you don't know?

The most celebrated "display" issues—and Washington's newest "fighting words"—center around "open architecture." The idea hinges on the possibility that transmission formats might be improved. The government should therefore require manufacturers to design HDTV receivers as "dumb" display devices—basically, picture tubes with their associated driver circuits—into which "smart"

reception/decoding modules may be plugged later. This way, the FCC would never have to bet on a single transmission standard. This concept, like few others, has managed to unite the globe's TV manufacturers: They hate it. They say it will be hard enough to sell the necessarily large and expensive HDTV receivers. The lessons of TV-marketing history are that you cannot sell the public a box without at least being able to build-in a tuner to demonstrate that the box will work. Moreover, claim video manufacturers, such a monitor would be prohibitively complex and costly even if the public otherwise would accept it.

WHAT CONCERNS CONGRESS?

Truth be told, none of the above—just the HDTV Gap. Although a trade association executive has suggested that when candidate Bush talked about "a thousand points of light," he was endorsing a display standard, most Members of Congress would not know a pixel from a pickle. Chairmen and scientists, such as Reps. Markey and Ritter, respectively, will handle the technical end.

Aside from the prospect of "foreign" HDTV machines entering and defining our markets, some in Congress maintain that HDTV will be a "technology driver" that will confer foreign leads in semiconductor and display technology as well. Encouraged by the American Electronics Association and the Semiconductor Industry Association, several members of Congress have said that HDTV is one consumer electronics product in which U.S.-based manufacturers *must* participate. They

have suggested a government-backed consortium to develop domestic HDTV products, or perhaps the imposition of licensing or trade restraints against foreign-affiliated TV-set producers in order to ensure domestic-owned involvement.

However, others point out that most TV sets and picture tubes sold in the United States are, in fact, already manufactured here, although primarily by foreign-affiliated companies. They say this will not change, no matter which companies develop HDTV formats. And they say that to assume HDTV will "drive" semiconductor and display systems (rather than vice versa) is to assume that those areas would otherwise remain static for the next decade. Encouraged by such organizations as the Electronic Industries Association, they point out that many American companies—especially semiconductor makers—manufacture overseas; why penalize foreigners for manufacturing here?

WHAT HAPPENS NEXT?

You can be certain that HDTV will be one of the most thoroughly studied issues of the 101st Congress and the Bush Administration. Already, the Secretary of Commerce has appointed an elite Advisory Committee on Advanced Television Systems. The cabinet-level Economic Policy Council has a Working Group on the subject. The United States Trade Representative has a special task force, as does the research arm of the Department of Defense, as well as the President's Science Advisor.

In Congress, an "HDTV Caucus" is chaired by Representatives Mel Levine (D., Calif.) and Don Ritter (R., Pa.). Congress's Office of Technology Assessment is preparing a report. In 1988, hearings were held by the House Energy & Commerce Committee's Subcommittee on Telecommunications (Ed Markey, D., Mass., Chairman) and the House Science, Space & Technology Committee's Subcommittee on Science, Research & Technology (Doug Walgren, D., Pa., Chairman). Expect Senate committees of comparable jurisdiction (i.e., everything) to try to keep pace in 1989. Candidates are the various committees on Appropriations, Armed Services, Commerce, Finance, Governmental Affairs, Judiciary, and Small Business.

Returning to what the government *must* do to bring us HDTV, Congress will be looking over the FCC's shoulder. Wisely, the FCC appointed a distinguished Advisory Committee to make recommendations—and help take the heat. The committee's chairman is Richard Wiley, a practicing lawyer and former chairman of

(Continued on page 56)

Calls and Letters

You can obtain information or express opinions about HDTV by writing or calling the following addresses/phone numbers in Washington, D.C. In fact, for any congressman or senator, you can call the Capitol Switchboard (202) 224-3121.

Congressman ABC
U.S. House of Representatives
Washington, D.C. 20515

Senator XYZ
U.S. Senate
Washington, D.C. 20510

U.S. Department of Commerce
Office of the Asst. Secretary for
Communications and Information
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Washington, D.C. 20230
(202) 377-1331

Federal Communications Commission
1919 M Street, N.W.
Washington, D.C. 20554
(202) 632-7000

American Electronics Association
1225 I Street, N.W.
Washington, D.C. 20005
(202) 682-9110

Electronic Industries Association
HDTV Information Center
1722 I Street, N.W.
Washington, D.C. 20006
(202) 457-4919



See 'em, hear 'em

Gazing at
(and listening to)
Who, Def Leppard,
Tina Turner, and
more on all three
sizes of CD-V

BY KEN RICHARDSON



The Who deserve better than Best.

Our story so far: Polygram, Warner Bros., Elektra, Atlantic, and Enigma release the first 46 pop titles on Compact Disc Video, or CD Video for short, or CD-V for shorter. Most are 5-inchers (one videoclip plus 20 minutes of audio-only material), a few are 12-inchers (90 minutes of audio and video), and all are reviewed in our January 1989 issue.

Warner Bros. had planned to follow up with five 5-inchers from Dire Straits, but all were on hold as our current issue went to press. Enigma also has pending two titles from Stryper and Devo. However, the format's primary backer, Polygram, has since released its third batch of CD-Vs: ten 5-inchers, three 12-inchers, and the first 8-inch entry.

Most interesting this time are the 12-inch titles. Of these, the most intriguing—and ultimately the most frustrating—is **Who's Better, Who's Best** (Polygram Music Video 080 345-1). The first thing you notice is that the cover photo of the Who is reversed (though it's correct on the videocassette version). And in this case, you certainly can judge a disc by its cover, because this CD-V is troublesome:

— Half of the 20 performances are lifted straight from Jeff Stein's 1979 film documentary, *The Kids Are Alright*. Or maybe I should say lifted too quickly, as they appear here noticeably speeded up, an inexcusable mastering error.

— Four other tracks, though not repeats of versions in the film, are inferior to those versions. The CD-V's 1965 "My Generation" is tough and very live, one of the few non-lip-synched performances from the German TV show *The Beat Club*, but there's annoying distortion in the vocals (Sonic Solutions, where are you?). In *Kids*, you get three versions of the song: the amusing *Smothers Brothers* appearance, a live "blues," and the Destroy All Instruments montage. Also, "I Can't Explain" and "Anyway, Anyway, Anywhere" appear there as early, vigorous live numbers, while the CD-V offers the studio tracks set awkwardly to miscellaneous footage (drummer Keith Moon bashing away during the latter's quiet breaks, for example). The CD-V's live "Magic Bus," from a 1971 Amsterdam show, seems to have an edge over the film's lip-synch take but loses it by deleting the closing raveup.

— The CD-V's six remaining songs do not appear in *Kids*, yet most have drawbacks of their own. The 1972 videoclip of "Join Together" and the 1973 tape of "Relay" from the British TV show *Russell Harty Plus* are okay, but both are lip-synched rather drunkenly, and the latter's natural color is ruined halfway through with bad psychedelics. "5:15," meanwhile, is the shortened, resequenced version from the 1979 film of *Quadrophenia* and completely unnecessary (and again, dubbed onto this collection at an accelerated speed). Even dumber, though, is the placing of 1981's "You Better, You Bet" (too fast? you bet!) between 1967's "Pictures of Lily" and "Anyway, Anyway, Anywhere" so that all the non-color material could appear together. ("This promotional clip was shot in black and white for artistic reasons," the onscreen notes apologize. Talk about a colorization generation!) That leaves only "The Kids Are Alright" (8mm promo) and "I'm Free" (live in London) as relatively irreproachable.

— Someone seems to have toyed with the sound of "Won't Get Fooled Again." This live version was staged in 1978 for



Kids, but its appearance on CD-V raises questions: Why is Moon, just before Roger Daltrey's climactic scream, clearly heard slapping his cymbals three times when he is clearly *seen* doing a snare roll? Why have Daltrey's extra yelps disappeared from the last lyric? And why has Pete Townshend's mistake of entering too early with his final windmills been masked with extra chords from the studio track?

— The CD-V does have four more tracks than the videocassette: "Anyway, Anyhow, Anywhere," "Baba O'Riley," "Relay," and "5:15." But apart from that powerful version of "Baba" (also staged for *Kids*), they aren't missed on videotape, and apart from "Relay," they aren't as "rare" as Polygram's press claims.

— Source credits, absent from the videotape, are provided before each track on the CD-V, but the Woodstock footage of "Pinball Wizard" and "See Me, Feel Me" is laughingly credited to a mere "live performance in the U.S.A. in 1969."

Better, Best isn't a total disaster, but anyone wanting an audio-video collection of the Who should pass up this disappointingly assembled program and instead find a copy of *The Kids Are Alright*—which,

by the way, offers such truly rare material as the mini-opera "A Quick One While He's Away," performed live at the Rolling Stones' legendary Rock and Roll Circus.



Sa-Fire: She's got legs, but boy, she hasn't been told how to use them.

Or you could buy Def Leppard's 12-inch *Historia* (080 359-1), which may not offer music as important as the Who's but which certainly is a far superior videoclip compilation of a band. Def Leppard's still current *Hysteria* LP still strikes me as largely lame—and *seven* of *Historia*'s 18 clips are from that album—but there's more than enough first-rate metallic pop here to please everyone. Best are the *Pyromania* thrillers "Photograph," "Rock of Ages," and "Foolin'" (though we can do without director David Mallet's silly sorcery concepts; notice that the band doesn't get near him for its recent performance clips, instead selecting Bon Jovi lensman Wayne Isham). You also get both clips for "Bringing On the Heartbreak" (1981 with guitarist Pete Willis, 1984 remix with replacement Phil Collen) and both for "Pour Some Sugar on Me" (concept for U.K., performance for U.S.). Plus rarities like the band's failed first single, "Hello America," shot for *Top of the Pops* but never aired, and its own favorite clip, "Me and My Wine," a parody of the British TV series *The Young Ones*. It's all tied together with illuminating onscreen notes and credits, presented in good humor as scratchy silent-film captions. And both videocassette and CD-V add "Love Bites" as the unlisted 18th clip.

Tina Turner's *Rio '88* (080 349-1), from the live HBO broadcast, falls somewhere between the Def Leppard and Who 12-inchers. It begins poorly, with location shots of beaches and bikinis leading to the Grand Entrance of Fertility Goddess Tina, whose voice barely rises above the band's mushy sound during the ill-chosen opener, "Addicted to Love." Not until the eighth number, a cover of "Help!," does the program start to burn; Turner invests her aching version with all the pain John Lennon intended for the original. A convincing "Let's Stay Together" follows, and now that Turner is finally smoking, she shouts a mean "Proud Mary" that confounds the passage of time. There's one more rocker, "What You Get Is What You See," before she then lulls the crowd with the parting "Break Every Rule" and "Paradise Is Here." The live sound improves in the second half, and the entire show is sensibly directed by, depending on whether you read the screen or the disc cover, Roberto Talma or Robert Talmo.

Polygram's lone 8-inch CD-V is *Crazy Nights* (080 373-9), offering all three videoclips from the Kiss album of the same name: "Turn On the Night," "Reason to Live," and "Crazy Crazy Nights." The first and third, however, already appear on their own 5-inchers. The band's best video product remains the 12-inch *Exposed*.

Then there are the ten new 5-inchers, which unfortunately include very little of note. It's obvious we're in stagnant waters when a *fourth* Bon Jovi title, *You Give Love a Bad Name* (Mercury 870 737-2), is in fact the best of this lot. Not that there's anything wrong with the videoclip, but the four audio-only tracks are merely a repeat of that title song (in keeping with the Polygram family's custom for all 5-inchers), a repeat of "Let It Rock" from Bon Jovi's first CD-V, a repeat of "Raise Your Hands" from its second CD-V, and the appearance of the only remaining track from *Slippery When Wet* yet to make it to any CD-V, "Without Love." You could do a lot worse, though: rap pap from the Fat Boys on *The Twist* (Tin Pan Apple/Mercury 870 742-2, with the audio-only "Rock the House, Y'all," "Comin' Back Hard Again," "Back and Forth"), prepackaged "Latin hip-hop" (oh yeah!) from Sa-Fire on *Boy, I've Been Told* (Cutting Records/Mercury 870 743-2, with "Gonna Make It," "Together," "Boy" remix), the usual metal junk from Scorpions on *Believe in Love* (Mercury 870 735-2, with "Love on the Run," "Walking on the Edge," "Media Overkill"), ancient synth pop from Tears for Fears on *Everybody Wants to Rule the World* (Mercury 870 745-2, whose "The Marauders," "When in Love with a Blind Man," and "Pharaohs" are all previously unreleased but all dirge-ibles), and Tony! Toni! Toné!'s *Born Not to Know* (Wing 870 736-2, which like their first CD-V has nothing but title-track remixes).

Elsewhere, you can hear the blues mangled by two bands that haven't a clue what the blues is: Cinderella, as appearing on *Don't Know What You Got (Till It's Gone)* (Mercury 870 734-2, with "Bad Seamstress Blues"/"Fallin' Apart at the Seams" joined by "If You Don't Like It" and "Take Me Back"), and New Frontier (no band is more misnamed than this quartet of AOR metronomes), as appearing on *Under Fire* (Mika/Polydor 870 740-2, with "Lonesome Blues" joined by "American Dream" and "Burning the Page"). Guitarist Robert Cray can write and play the real thing on "Don't You Even Care?," one of the audio tracks from *Don't Be Afraid of the Dark* (Mercury/Hightone 870 741-2), but I wish the title song and the other audio cuts ("Gotta Change the Rules," "At Last") weren't so wimpy. Wimpy, too, are Kool and the Gang on the audio-only "Cherish" and "Open Sesame" from *Rags to Riches* (Mercury 870 738-2). However, "Jungle Boogie" has that great riff, the title song is well-arranged funk, and the title video is a fine tale of a model's rise and fall. □

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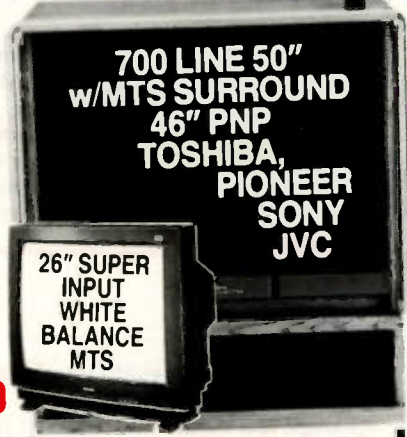
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Keeping the Rabbit Ears Alive

(Continued from page 52)

the FCC. The Advisory Committee has retained Robert Crandall, of Washington's Brookings Institution, as economic consultant and has turned over the testing of proposed transmission systems to a technical subcommittee. Field testing of systems was supposed to have begun by the time you read this, but at this point (December 1988) it is already well known that testing could not begin at least until August 1989. This is because of scheduling technicalities: Nobody is ready to be tested! So an optimistic projected date for a technical subcommittee's recommendation would be late 1990. Figure another year for evaluations, recommendations, counterproposals, comments, etc., etc. Add two more years for design and production to get rolling, and it will be at least 1993—and probably closer to 1995—before HDTV sets capable of receiving over-the-air transmissions appear in the stores.

If you want to see more immediate activity, watch Representative Markey's subcommittee. At a September 1988 hearing, Markey "asked" interested trade associations, the FCC, and Mr. Wiley to submit status reports and plans of action by January 4, 1989 (later extended to February 1). These reports will be on the public record by the time you read this, but as of December 1988, here is the Washington Wisdom about what each will say:

AEA (American Electronics Association). HDTV is critical to competitiveness in display and semiconductor technology, as well as to a rebirth of a U.S. consumer electronics industry. Congress should act to ensure *domestically owned* participation in display, factory automation, and semi-

conductor technologies related to HDTV. This may involve a consortium in which foreign participation is limited, or domestic-content or differential-licensing requirements. The FCC should not rush to choose a standard if doing so confers advantages on foreigners.

SIA (Semiconductor Industry Association). New generations of semiconductors driven by HDTV will be worth tens of billions of dollars. Foreign semiconductor manufacturers have competed in an unfair and targeted fashion and benefit from ties to electronics manufacturers. Congress should offer assistance or incentives for domestic semiconductor manufacturers to participate in HDTV research, development, and manufacturing.

EIA (Electronic Industries Association). The real need is for basic policies aiding U.S. electronics research, development, and manufacturing in general, not just for HDTV. It may be okay to encourage participation of domestic companies, but do not discriminate against foreign-owned companies or penalize their U.S. investments, which create American jobs. Existing antitrust-law exemptions should be used to encourage joint research and development efforts. TV and picture-tube manufacturers in this country already sustain thousands of jobs. As in the case of NTSC, the TV industry should be looked to for a recommendation of which standard should be adopted by the FCC—which should choose a single system as soon as possible.

FCC (and its Advisory Committee). We agree with the AEA, SIA, and EIA! We will make a recommendation as soon as possible, consistent with requirements laid out earlier. We will take as much time as is necessary to make a sound decision. We doubt that any de facto format will be es-

tablished by nonbroadcast media. We underscore the importance of compatibility among nonbroadcast HDTV, the eventual HDTV transmission format, and NTSC.

You can also expect submissions to have been made by Zenith Electronics Corporation (the last domestically owned TV manufacturer), the TV networks, the cable-TV industry, Hubbard Broadcasting (which is interested in Direct Broadcast Satellite HDTV), the regional telephone companies (which are interested in supplying HDTV through their fiber-optic networks), and various Hollywood and non-Hollywood companies involved with studio production standards. As Jimmy Durante used to complain, "Everybody wants to get into the act!"

As is usually the case, you, the HDTV consumer, will ultimately pay for and live with the government's decisions. Your representatives in Washington probably will not solicit your opinion about HDTV, nor will they necessarily be pleased to hear from you. But, if you have something either (1) very strongly felt or (2) very intelligent to say, many in Congress will listen. Many congressmen actually do consider what their constituents have said about an issue though the mail, by telephone, or in person. One way to begin a dialogue is to visit your Representative's or Senator's local office and stand on his or her desk until someone talks to you. □

Robert S. Schwartz is a partner in the Washington office of McDermott, Will & Emery. He has represented equipment manufacturers on several legislative issues, including HDTV and home taping. However, any opinions expressed in this article are those of Mr. Schwartz and not necessarily those of any client or of HIGH FIDELITY.

Aspects of HDTV

(Continued from page 50)

cation, see "The Bandwidth/Interference Problem," p. 50.)

Europe and Japan have attacked this problem head-on, or, rather, from above. Both are implementing HDTV systems using direct satellite transmission to the home. There's a lot of space in the spectrum at satellite operating frequencies. This, combined with the relatively small satellite "footprints" required to effectively cover the European or Japanese landmasses and the predominance of government-controlled television in those countries, points to satellites as an effective solution to the HDTV broadcasting problem. Europe is even going so far as to make its satellite-HDTV system totally incompatible with its PAL and SECAM terrestrial-broadcast systems. To view satel-

lite HDTV programming in Europe, you will need a small receiver dish antenna and a new, high-definition TV set. In addition, Japan plans to introduce EDTV-like improvements in its terrestrial broadcasting.

Things are different in the United States. What seems to be most important to the FCC are not technical considerations—although they are topics of considerable concern—but the preservation of terrestrial broadcasting in America. "Broadcast stations provide services unique in the array of entertainment and non-entertainment programs freely available to the American public," runs the ruling. "Unlike many other countries, the United States has a strong and independent system of privately owned and operated broadcast stations that transmit local and regional news, information, and entertainment as well as national and international programs. Therefore, initiating an

advanced television system within the existing framework of local broadcasting will uniquely benefit the public and may be necessary to preserve the benefits of the existing [TV broadcasting] system."

The move to preserve free terrestrial broadcasting is a laudable attempt to combat what could otherwise be a very elitist (because the HDTV sets will start at around \$2,000) start-up to HDTV broadcasting. On the other hand, insistence on broadcast compatibility brings up the very real spectre of picture degradation: A jack-of-all-trades HDTV signal is likely not to be a master of either HDTV or NTSC. And if the picture isn't so immediately outstanding, why buy an HDTV set at all? Let's hope that somebody, somewhere comes up with a solution that fulfills the FCC's fondest hopes for signal compatibility and also provides picture and sound quality second to none. □



**Edited by Ted Libbey
and Ken Richardson**

The Two-Sided CD

It was the last day at MIDEM, the annual midwinter gathering of the music industry in Cannes, on France's Côte d'Azur, and George Volckening was threading his way through the crowd with a Compact Disc reissue of Furtwängler's 1950 *Ring* in hand. Yes, in hand—the whole of Wagner's tetralogy, on six double-sided CDs, in a boxed set not much bigger than a club sandwich. It seemed so ordinary I had to remind myself that I was looking at a phenomenon. Each of those CDs had a playing time equivalent to three LPs.

As sales manager for Qualiton Imports, Volckening wanted to make sure I saw the set before roving, disc-hungry press types like myself had spirited the last of them away from the producer, a small Italian firm aptly named Nuova Era. The trick, he pointed out, was that each "CD" was really two CDs glued together—not perhaps the most elegant method of doubling a disc's capacity, but eminently practical, as a test spin on a nearby player instantly proved.

At the dawn of the CD era we were all told that such things were impossible and not really desirable anyway. Here was proof that a two-sided CD was no more impossible than a two-sided phonograph record (remember, *it* also started out with grooves on just one side) and a good deal more desirable than a conventional CD when it comes to packing a lot of music into a little space. Of course, both sides of the "disc" have to be mastered and pressed separately, so it's not as simple or as cost-effective a procedure as stamping out two-sided LPs. But it is certainly convenient for the purchaser (imagine Beethoven's symphonies complete on three CDs), and it eliminates paper and packaging costs for the producer.

It wasn't necessary to go to MIDEM to find out what some of the European labels are up to. Michael Emmerston, president of German-owned BMG Classics (parent company of RCA Red Seal and Eurodisc), called a press conference in New York this winter to announce several major developments, including the signing of Sir Colin Davis to a major contract and the creation of a new "Günter Wand Edition" in conjunction with Deutsche Harmonia Mundi. He also revealed details of an ambitious Soviet strategy that will involve Yuri Temirkanov in recordings with orchestras in Leningrad, London, and Philadelphia, as well as the acquisition of several new talents, among them piano prodigy Evgeny Kissin.

A courtesy call from Lynn Winkler, public relations administrator for the Minnesota Orchestra, brought more news: British-based Virgin Classics, which has made an impressive entry into the catalog since its launch last fall, will be recording the Minnesotans in a Mahler cycle under the baton of Edo de Waart. *Ted Libbey*

Your Article Here

Back in November 1986, in my first "Medley" column as popular music editor, I announced that my half of this page would be open to contributions from readers. The point was to help narrow the gap between fans and critics—who are supposed to be the same people, the only difference being that the latter are skilled/lucky enough to get published. To emphasize our common heritage (*there's* a highfalutin phrase for ya) and to otherwise quash the idea that critics are demigods, I published in the January 1987 "Medley" not an article but a cartoon by the now celebrated Matt Groening: "How to Be a Feisty Rock Critic." One hopes we all, fans and critics alike, got a good laugh.

Since then, nine reader contributions have appeared here, dealing with artists from Elliott Murphy to Irving Berlin and with topics from the loss of 45s to how radio stinks. I appreciate all of your contributions, published and unpublished, and this month would like to encourage more submissions while clarifying the ground rules.

First, remember that it's the *popular music* portion of "Medley" that is open to your work; columns about classical music or purely technical matters are not appropriate. Second, you should keep a copy of your article; I'm basically a one-person operation here, friends, and unfortunately have little time to return all unpublished manuscripts. Third, in addition to supplying your name and address, please note your telephone number; this will help me contact you quickly so that we can arrange that little matter of importance known as your payment.

And speaking of money, it's time to give you more, so effective immediately, we pay not \$100 but \$125 for each published article in this space. Of course, I know that the bucks are actually of no concern to you—that your real passion is to promote truth, justice, and the American way of rock and roll. (Go ahead: Laugh on my lapels.)

But seriously, folks (that was Joe Walsh's last good LP, wasn't it, full of trim guitar and well-written songs, though Side 2 was admittedly a bit thin, except for the overplayed "Life's Been Good," which was the *only* played song from the album—but I digress), what do you want to write about? Are you tired of hearing how great R.E.M. supposedly is and would like to expound on the geekness of Michael Stipe? Are you dying to scrutinize the state of jazz, country, or polka-zouk on LP, EP, CD, CD-3, CD-V, DAT, or any other format that rhymes with "gee"? Send your 425-word article to Ken Richardson, Popular Music Editor, HIGH FIDELITY, 825 Seventh Ave., 8th floor, New York, N.Y. 10019. This space will continue to include articles by me and my fellow HF regulars, but I'd just as well fill most of each year's 12 columns with what's on *your* mind. *Ken Richardson*

T H E D O O R

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A report card on musical glasnost

I S O P E N

Not so long ago,

Americans thought of the Soviet Union as a country with borders that were hermetically sealed, a place where information oozed in or out only with great difficulty. The popular belief was that Soviet culture was strictly controlled by a select group of commissars who decreed what music was to be heard, what art seen, what books read, and what films shown. It was supposedly a grim scene, where things marched to the tune of an all-knowing leader.

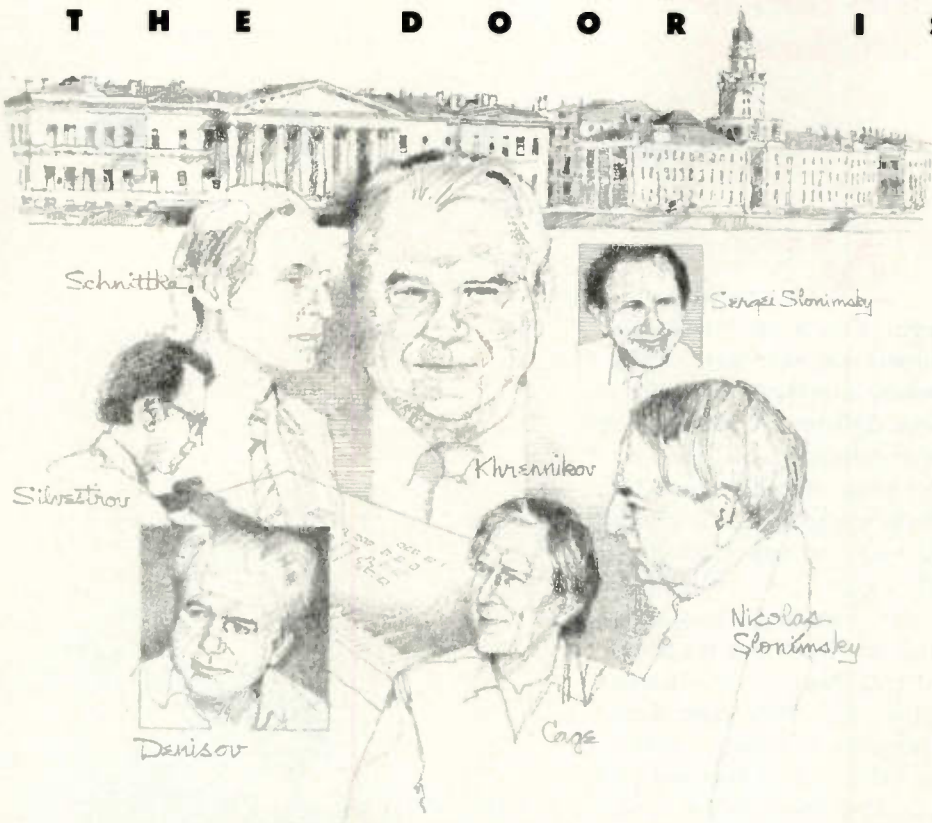
In 1965, I made my first trip to the Soviet Union and discovered that even then this was not true. At the time, I attended some of the first public performances of works by such avant-gardists as Valentin Silvestrov and Leonid Grabovsky, and I encountered the music of the more mainstream composers Edison Denisov (b. 1929), Alfred Schnittke (b. 1934), and Rodion Shchedrin (b. 1932). I also saw a number of scores in graphic notation and discovered that both twelve-tone and chance music were in full swing. Although the authorities seemed to cling to a more conservative viewpoint, new creative forms had taken root and the first shoots were already surfacing. Performances and publications of what was then considered radical music had already begun to appear.

By the mid-1980s, shortly after the beginning of the Gorbachev era—and after 20 years of various forms of musical experimentation, including forays into jazz (the Soviet Union has a long and fascinating history with regard to jazz) and rock 'n' roll—the Union of Soviet Composers was ready to make a major statement. This took the form of a festival last May in Leningrad, called simply the Third International Festival of Music.

Ordinarily, music festivals are a routine part of musical life; they happen periodically, in every region that has a symphony orchestra or an opera house. But this festival, in part because it was sponsored by the Soviet composers' union, was a historic event. Under the guidance of Tikhon Khrennikov, who has

By Joel Spiegelman





been at the helm of the union for the past 40 years, the Soviet government invited 300 guests from 62 countries to participate in a two-week marathon of modern music. More than 160 recent 20th-century works of all complexions were performed before a seemingly tireless audience of Leningrad music lovers.

The organizers of the festival, Aleksandr Tchaikovsky (no relation to the great Pyotr Il'yich, and presently the acting chairman of the Union of Composers) and Vladimir Panchenko (new director of Gosconcert, the official concert-management agency), showed imagination and organizational genius in putting together what must be considered one of the greatest modern music exhibitions of the century. The festival marked the official opening of the Soviet Union's musical doors, and it marked it with a flourish on the most contemporary of notes.

The range of music was wide, encompassing everything from Kagel to Khrennikov. Foreign participants included John Cage, who received a hero's welcome and appears to be as much a musical guru in Soviet minds as he is in the West; Luciano Berio; Iannis Xenakis; Luigi Nono; Nicolas Slonimsky; Vladimir Ussachevsky; and John Adams, who received a roof-raising ovation when the Lithuanian Philharmonic, under the direction of Juozas Domarkas, played his *Harmonielehre*. I was represented by a Piano Trio based on Jewish themes, a work that I was told—only two years ago, and by a prominent Soviet com-

poser—would never be played in the U.S.S.R. because it was too Jewish. There were composers from Africa, Asia, the Middle East, South and Central America, and both Eastern and Western Europe at the Leningrad gathering as well. Unlike most music festivals in the West, this one offered a real opportunity to meet and share ideas with composers and musicians from all over the world.

Performances of new works by a stellar array of Soviet composers were among the highlights of the festival. Worthy of note were *Svetlaye Pechal'* (*A Light Sadness*) for orchestra, boys' choir, and two vocal soloists, by the Georgian composer Gia Kancheli; *Chass Dushi* (*The Hour of Soul*) for orchestra, solo percussion, and mezzo-soprano, by Sofia Gubaidulina; and an engaging chamber-orchestra version of Shchedrin's ballet *Lady with a Lapdog*. Smaller pieces of real value by composers such as Silvestrov, Tchaikovsky, and Yuri Falik also should be mentioned.

There were a number of stage works as well, among them Sergei Slonimsky's intricate, dramatically scored opera *Maria Stuart*, which was splendidly enacted at Leningrad's progressive Maly Theater. Khrennikov was also represented at the Maly by his comic opera *Dorothea*, a piece of *comedia dell'arte* farce that is perhaps the closest the Soviets will ever get to a Broadway musical. The piece left us rolling in the aisles; and I couldn't help wondering if someday we might get a chance to see it on an American stage.

Should New York, Houston, San Francisco, or Chicago ever be seriously interested in presenting a new Russian opera of great power and depth coupled with some of the most glorious music of the present-day Soviet Union, then we must by all means have Andrei Petrov's *Peter the Great*. To quote the noted nonagenarian author/musicologist Nicolas Slonimsky, who attended a performance in the course of the festival: "After *Khovanshchina*, Petrov's opera is probably the most impressive work on the period of Peter the Great. Both the text and music have the ring of authenticity because the composer went back to not only the original musical modalities but also to original texts of the period."

Glasnost has given the Soviet musical world a measure of freedom that it has not known since the 1920s. Performances of works like Falik's *Zveniden*—a cycle of ten songs for mezzo-soprano and orchestra based on previously banned poetry by outstanding Russian authors—would have been unthinkable prior to Gorbachev's policies. Lev Ginzburg, foreign editor of *Musikalnaya Gizhniy* (*Musical Life*), a popular Soviet monthly, says that the installation of democratic procedures in all spheres of musical life, together with the policy of economic self-sufficiency, is radically changing the character of the Soviet musical establishment. Gosconcert's Panchenko is working on turning that organization into a viable commercial institution; he says that Soviet artists now have freedom of choice to either accept or reject the invitations to perform that they receive. Many, I know, have begun to make their own deals. Melodiya, the state-run record label headed by Valery Sukhorado, is carrying on its own *perestroika* and actively seeks joint ventures with major Western record labels. With most of the old obstacles removed, Soviet artists also now travel freely to the West. All that is needed is an invitation; exit visas are granted with relative ease.

Soviet musicians have long awaited the changes that are taking place and the opportunities that come with them. As far as I can see, the Soviet musical establishment gets an "A" for making far-reaching reforms and for taking the necessary first steps to join the world community of music lovers and music makers. □

Joel Spiegelman is a composer, conductor, and keyboardist. This month he is slated to conduct an all-Russian program with the Leningrad Philharmonic and a performance of Tchaikovsky's Pique Dame at the Maly Theater.

BEETHOVEN

T H E O L D ~ F A S H I O N E D W A Y



DANE PENLAND/SMITHSONIAN

The Smithsonian Quartet, a period foursome

BEETHOVEN: Symphonies (3)*; String Quartets (6)†; Sonatas for Cello and Piano (2)‡.

*Smithsonian Chamber Orchestra, Schröder**; *Smithson String Quartet†; Slowik, Weaver‡. Timothy Martyn, prod. Smithsonian ND 0320 (D, 6.)* (6). (5). (*Smithsonian Collection of Recordings, P.O. Box 23345, Washington, D.C. 20026.*)

Symphonies: No. 1, in C, Op. 21; No. 2, in D, Op. 36; No. 3, in E flat, Op. 55 ("Eroica"). String Quartets, Op. 18: in F, G, D, C minor, A, B flat. Sonatas for Cello and Piano, Op. 5: in F, G minor.

BEETHOVEN: Symphony No. 1, in C, Op. 21; Symphony No. 6, in F, Op. 68 ("Pastoral").

London Classical Players, Norrington.

① *David R. Murray, prod. Angel EMI CDC 49746 (D).*

BEETHOVEN: Symphony No. 6, in F,

Op. 68 ("Pastoral"); Overture to Collin's "Coriolan," Op. 62; "Egmont" Overture, Op. 84.

Academy of Ancient Music, Hogwood. Peter Wadland, prod. L'Oiseau-Lyre 421 416-2 (D). (5)

BEETHOVEN: Symphony No. 9, in D minor, Op. 125 ("Choral").

Harry, Bailey, Murgatroyd, George; Oslo Cathedral Choir, Hanover Band, Goodman. Nimbus NI 5134 (D).

As the 1980s draw to a close, period-instrument performances of Beethoven's music seem to have become as hot an item as, well, fax machines. These recent releases include entries from four of the period-instrument symphony cycles now underway; Frans Brüggen's Orchestra of the 18th Century is at work on the Beethoven canon, too, and John Eliot Gardiner promises yet another cycle starting next

year. Also among the present attractions are some remarkable chamber-music performances from players affiliated with the Smithsonian Institution's music program.

What's striking about the best of the symphonic recordings is how little the period instruments call attention to themselves—or, to put it more accurately, how quickly the ear adjusts to them. Roger Norrington's London Classical Players has set new standards for true intonation, razor-sharp rhythms, and tonal fullness, and even the Hanover Band and Christopher Hogwood's Academy of Ancient Music seem noticeably improved over some previous recorded incarnations. Norrington's accounts of the First and Sixth symphonies [reviewed last month by *K. Robert Schwarz—Ed.*] have pride of place here, but Hogwood offers surpris-

(Continued on page 64)



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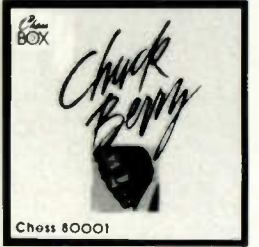
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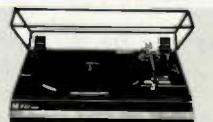
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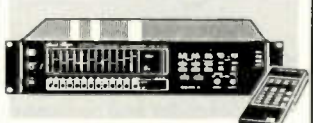


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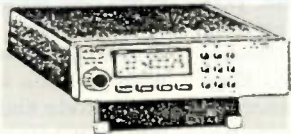


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(Continued from page 61)

ingly stiff competition in the latter, and Jaap Schröder and company turn in a lively *Eroica*.

Apart from the Hanover Band in the Ninth Symphony—that's another story—Norrington outdoes the competition in sheer numbers of strings: He uses twenty violins, eight violas, and six each of cellos and basses in both the First and Sixth symphonies. In the Sixth, by contrast, Hogwood's disposition is fifteen, five, five, and five, respectively. In the first two symphonies, Schröder's string band comprises a mere eleven, three, three, and two, and it's enlarged by only three players in the *Eroica*. The numbers translate into a heftier sonority and a more dramatic impact in Norrington's performances—and, perhaps, an effect closer to what we are used to from the modern symphony orchestra; ditto the full-bodied recorded sound. Hogwood compensates with rather glamorized (read: multi-miked, and sometimes falsely spotlit) sonics. In such company, and given clear and ungimmicky recorded sound, the Smithsonian band sounds rather lightweight, if not scrawny.

What impresses, too, is how convincingly—definitively, even—the best of these performances vindicate Beethoven's long-ignored metronome markings. What we get is not the plush, monumental, mythic Beethoven familiar from "standard" 20th-century performances, but a composer out to astonish, sometimes shock and tease. Do what Beethoven says, and you'll realize that nowhere in the symphonies did he write what the late 19th century would consider a true slow movement. And once you become sold on the metronome markings as pretty apt starting points, the Beethoven you've been used to heretofore will seem flabby and toothless.

In the First Symphony both Norrington and Schröder fall shy only of the finale's vertiginous 88 to the half-note. But—partly a matter of weight, partly of interpretive profile—Norrington's impresses as the more bracing account. Schröder's band does us colonials credit, but it's not yet the equal of its London counterpart; quite aside from the string issue, Norrington's winds are noticeably firmer in tone as well as more tellingly shaded. Schröder's account of the Second Symphony, like his reading of the First, is well paced. The slowing for the scherzo's trio seems a little self-conscious, though, and in the finale Schröder just misses the authentic twinkle

of Beethoven's humor.

The Norrington and Hogwood accounts of the *Pastoral* are so similar in impact that—sonics apart—I'm not at all sure I would be able to differentiate between them in a blind comparison. Considering the large overlap of personnel between the two orchestras, this shouldn't be surprising. (One interesting example: Roy Goodman, who conducts the Hanover Band, is Hogwood's concertmaster and Norrington's principal second violinist.) But maybe Hogwood has reconsidered his oft-quoted dictum that to be true to the conductorless (and usually hastily assembled) performances of the composer's day, "authentic" modern performances should be relatively impersonal. In any case, both conductors approach the symphony's first movement without sentimentality but with plenty of affection. What we get is a brisk stride through the countryside and a goodly breeze, not a lazy, hazy summer landscape. And in the storm, both conductors stir up quite a tempest—complete with violent snaps from the timpani. Norrington's is the more generous release, containing as it does the First Symphony; Hogwood offers an *Egmont* Overture more tautly rendered than most, and a less remarkable *Coriolan*.

London-based despite its name, the Hanover Band began its Beethoven symphony cycle as a conductorless outfit, and one with a good deal more enthusiasm than polish. Judging from the group's new Ninth Symphony, under the baton of Roy Goodman, standards have risen considerably, but a good many interpretive subtleties are still left to the hearer's imagination. Unlike Norrington in his recent recordings, Goodman doesn't bother

much with the metronome markings. He does clock in pretty close to Beethoven's surprisingly slow tempo for the *Alla marcia* section of the finale (even many partisans of the metronome markings think this tempo may have been an error on the part of Beethoven's nephew Karl), and the celebrated theme for the "Ode to Joy"—"An die Freude"—is introduced right at the composer's 80 to the half-note. But next to the nervous energy of Norrington's first movement—precisely what Beethoven's marking yields—Goodman's treatment sounds merely dogged; and while he avoids the deadly drag today common in the Adagio, he doesn't really work up to Beethoven's forward-moving tempo.

Goodman's solo quartet may actually be finer than Norrington's (Angel EMI CDC 49221). Radiant-voiced Welsh soprano Eiddwen HARRY is a real find, and bass Michael George is infinitely kinder to the ear than Norrington's tremulous Peter Salomaa. The mushy-mouthed Oslo Cathedral Choir, while pleasant in tone, is no match, however, for Norrington's crackerjack Schütz Choir. And those who object to the hall resonances of the Norrington and Hogwood recordings—I do not—will undoubtedly be maddened by the ample reverberation of All Saints Church, Tooting, which has been splendidly captured by the Nimbus engineers. Stick with Norrington.

To return to the Smithsonian release . . . the Smithsonian String Quartet (Jaap Schröder and Marilyn McDonald, violins; Judson Griffin, viola; Kenneth Slowik, cello) offers illuminating and often brilliant accounts of the six quartets of Opus 18. Here the leaner-toned old instruments do make a pronounced difference; in particular, Slowik's cello strikes the ear as more of a tenor than a bass instrument, lacking as it does the sumptuous lower register of its modern counterpart.

What's more arresting, actually, is the absence of the throbbing vibrato that modern string players seem to think essential on virtually every note. *Subtle* vibrato is used here and there as a kind of ornament or expressive coloration, but for the most part the strings are left to ring out clearly and sweetly. (By contrast, the Cleveland Quartet recordings of these pieces—which I've admired—sound soupy and sentimental.) Without that heavy vibrato, the occasional imperfection of tuning isn't camouflaged, but the Smithsonian players acquit themselves honorably. A more bothersome problem is the reticence of the sec-

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and violin in the ensemble.

Unlike most quartets that tackle these works on record, the Smithson can't have had long years of experience here, and on occasion efficiency is made to do for eloquence. But these are musicians of substance and sensitivity, and they find new wonders in these well-worn compositions. In the first movement of No. 4, for instance, how astonishingly *modern* the music sounds; these players understand how often Beethoven's is the art of the unexpected. Few collectors will want these as their only representations of Beethoven's first string quartets, but they are worthy complements to some of the beloved standard performances. They're also superbly recorded, with intimacy yet space around the proceedings. More, please.

Last, but assuredly not least, Kenneth Slowik and James Weaver turn in absolutely dazzling performances of the two Opus 5 sonatas for piano and cello. Slowik is a real virtuoso of his instrument, as well as a perky, probing musical personality. Weaver isn't quite in that league—I could imagine a more colorful partner—but he's a fleet-fingered and tasteful player. Again, sonics are first class.

Playing times: 5:12:33 (Smithsonian); 66:06 (Angel); 55:55 (L'Oiseau-Lyre); 65:00 (Nimbus).
Scott Cantrell

BERG: Songs.

SCHOENBERG: Cabaret Songs.

WEBERN: Seven Early Songs.

Dorow, Crone*, Jansent. Klaas A. Posthuma, prod. Etcetera KTC 1051. (Dist. by Qualiton Imports, Ltd.)

BERG: *An Leukon; Schliesse mir die Augen beide* (1907 and 1925 versions); *Sieben frühe Lieder* (*Nacht; Schilflied; Die Nachtigall; Traumgekrönt; Im Zimmer; Liebesode; Sommertage*); *Vier Lieder, Op. 2* (*Schlafen, schlafen; Schlafend trägt man mich; Nun ich der Riesen Stärksten; Warm die Lüfte*)*.

SCHOENBERG: *Brettli-Lieder* (*Galathea; Der genügsame Liebhaber; Gigerlette; Einfältiges Lied; Mahnung; Jedem das Seine; Aus dem Spiegel von Arcadia; Nachtwandler*)*. WEBERN: *Acht frühe Lieder* (*Tief von fern; Aufblick; Blumenruss; Bild der Liebe; Sommerabend; Heiter; Der Tod; Heimgang in der Frühe*)†.

Of these 30 songs by the triumvirate of the Second Viennese School, only one of them—Alban Berg's second setting, from 1925, of the Theodor Storm poem "*Schliesse mir die Augen beide*"—makes use of the dodecaphonic technique with which the composers' names are usually associated. And only one of them—Berg's "*Warm die Lüfte*," from the 1910 Opus 2 set—drifts in the ether of free atonality. Indeed, instead of exemplifying the intensely modernist idioms for which

Schoenberg and his two pupils became famous in the wake of World War I, these songs for the most part demonstrate the softer, more lyrical musical language of their early years. Schoenberg's *Brettli-Lieder*, written in 1901 for the Buntes Theater in Berlin, feature the square-cut rhythms and tidily shaped melodies that are the norm for cabaret songs. Except for the Berg pieces mentioned above, the other songs are characterized by straightforward settings of the texts and richly chromatic harmonies that are never far removed from solid tonal centers. The emphasis in all of them is of course on expressiveness, but it is expressiveness of the subtle kind known to Brahms and Wolf, not of the overt, exaggerated type that would later define the so-called Expressionist style.

Dorothy Dorow's usually pristine voice sounds a bit worn in those songs that take her to the bottom of her range. Still, she treats this material with sensitivity and, in the case of the Schoenberg cabaret songs, with the requisite sardonic humor and unabashed sexiness. Whatever the mood of the music, the accompaniments by Rudolf Jansen and Tan Crone (and, for Schoenberg's cocky "*Nachtwandler*," by a piccolo-trumpet-drum trio) seem superbly sympathetic. Playing time: 68:18.

James Wierzbicki

BLOCH: Schelomo.

DVOŘÁK: Concerto for Cello and Orchestra, in B minor, Op. 104;

Silent Woods, Op. 68, No. 5; Rondo, in G minor, Op. 94.

Feuermann; National Orchestral Association, Barzin. Philips 420 776-2 (A). Wild horses, under exceptionally favorable conditions, might possibly separate me from an ancient LP (RCA Victor LCT



Emanuel Feuermann

1016) on which Jascha Heifetz and Emanuel Feuermann recorded the Brahms Concerto in A minor for Violin, Cello, and Orchestra with the Philadelphia Orchestra under Eugene Ormandy. It would take more force than that, though, to wrest from me two releases that appeared even longer ago on RCA's short-lived bargain-basement Camden label: Richard Strauss's *Don Quixote* and Ernest Bloch's *Schelomo*, both featuring something called the Warwick Symphony Orchestra, which apparently played without a conductor. The cello soloist in the Strauss remained anonymous, but in the Bloch the label named him as Feuermann. For reasons involving the union and royalties, Camden couldn't identify the Warwick as, in fact, the Philadelphia Orchestra. Also, in fact, Ormandy conducted the Strauss (with Feuermann the anonymous cello soloist) and Leopold Stokowski the Bloch. If you can track down any of these three discs today, you will have authentic treasures, for they preserved three performances that will stand for the ages.

Feuermann, born in 1902 near Lwów (then under the Austrian flag), died in the United States only 40 years later, after a routine operation went awry. During his tragically brief career, he established himself as a cellist to rank alongside the very greatest. His performance of the Dvořák concerto compares favorably with Pablo Casals's legendary recording with the Czech Philharmonic under George Szell (Electrola 80614) and with the one Mstislav Rostropovich made in his mid-twenties with the same orchestra under Václav Talich (Supraphon DLPM 88/89).

Philips's new collaboration with the magicians at Sonic Solutions in San Francisco has electronically rejuvenated these old (1940-41) performances to an extraordinary degree, and their musical excellence and the bargain price combine to make them something not to pass by. Playing time: 68:01.
Paul Moor

BRAHMS: Sonata for Violin and Piano No. 2, in A, Op. 100; Scherzo, in C minor.

FRANCK: Sonata for Violin and Piano, in A.

Salerno-Sonnenberg, Licad. Patti Laursen, prod. Angel EMI CDC 49102 (D). □

When I reviewed Nadja Salerno-Sonnenberg's debut recording, on Angel EMI, of the Mendelssohn Violin Concerto, I found her famed interpretive mannerisms much more in evidence in lyrical passages than in virtuosic ones. That observation does not apply to the present disc of sonatas by Franck and Brahms, perhaps because sonatas in general are less likely to be padded with showy rhetoric. In fact, this new disc, in which Salerno-Sonnenberg collaborates with pianist Cecile Licad, comes far closer

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to being a revealing personal statement than the Mendelssohn ever did.

Salerno-Sonnenberg shapes the Franck sonata into a stunning, if willful, vision. Filled with explosive, wide-ranging contrasts of dynamics and flexible, pliant shifts of tempo, her account is refreshingly free of encrusted interpretive traditions. Some will regret the absence of a certain tonal sheen, but I admire her willingness to sacrifice beauty of sound for incisive muscularity. With Brahms's Sonata No. 2—conceived in a light, airy vein entirely at variance with the requisite Brahmsian gravity—Salerno-Sonnenberg is somewhat less successful. Her breathy bow stroke, essentially the same here as in the

**BRITTEN: The Heart of the Matter*;
Songs for Tenor and Piano.**

Mackie, Vignoles, Tuckwell*, Pears*.
● Andrew Keener, prod. Angel EMI CDC 49257 (D).

Two Songs by Thomas Hardy (*The Children and Sir Nameless; If It's Ever Spring Again*); *Three Early Songs* (*Beware!; O That I Had Ne'er Been Married; Epitaph: The Clerk*); *Two Songs by W. H. Auden* (*To Lie Flat on the Back; Night Covers Up the Rigid Land*); *The Oxen* (arr. Pears); *Three Rhymes by William Soutar* (*Dawtie's Devotion; Tradition; The Gully*); *Three Realizations of Henry Purcell* (*I'll Sail upon the Dog-star; The Knotting Song; Man Is for the Woman Made*).

other songs in this selection have diverse origins. The *Three Early Songs*, although not published until 1985 (and previously recorded by Benjamin Luxon on Chandos 8514), date from Britten's childhood; at the age of only nine, with preternaturally precocious self-revelation, he set Robert Burns's poem "O That I Had Ne'er Been Married." In the two Auden songs, he set two love poems addressed (according to Evans) "personally to Britten, for whom Auden harbored an unreciprocated passion." Britten's humor gets full rein in the Soutar songs, written in a Scots almost as impenetrable as Robbie Burns's.

Neil Mackie, who studied with Pears, has a light, flexible, but substantial tenor of considerable finesse, with excellent intonation and diction and more than enough technique to handle the occasional florid passages. Tuckwell and Roger Vignoles both perform up to their customary extremely high standards. Sir Peter, to put it simply, touches the heart.

An elegiac air, unavoidably, hangs over this record. That merely enhances its importance and its richness. Playing time: 54:26. *Paul Moor*

**COPLAND: Music for the Theater; Quiet City*;
Music for Movies; Clarinet Concerto.**

Gekker*, Taylor*, Blount†; Orchestra of St. Luke's, Davies. Gregory K. Squires, prod. Musicmasters MMD 60162L (D). (Dist. by Koch Import Service.)

Dennis Russell Davies's Pro Arte coupling of Copland's *Appalachian Spring* and *Short Symphony* with the St. Paul Chamber Orchestra was one of the highlights of the early CD catalog. Now Davies has joined forces with the Orchestra of St. Luke's, a New York-based ensemble, for an equally satisfying pairing of four of Copland's "popular" works: *Music for the Theater*, a crackling five-movement suite composed at the height of the composer's ardent flirtation with jazz; *Quiet City*, a slow movement for trumpet, English horn, and strings that began life as incidental music for a long-forgotten play by Irwin Shaw; *Music for Movies*, a five-movement suite drawn from Copland's scores for the films *The City, Of Mice and Men*, and *Our Town*; and the charming Clarinet Concerto, written in 1948 for Benny Goodman.

William Blount, who used to play saxophone with Buddy Rich's big band, is the appropriately jazzy soloist in the Clarinet Concerto; Chris Gekker and Stephen Taylor provide the haunting trumpet and English horn obbligatos in *Quiet City*. Davies conducts brisk, straightforward performances full of life and excitement—and, when appropriate, sweetness. Gregory K. Squires, who produced, engineered, and



CHRISTIAN STEINER

Nadja Salerno-Sonnenberg (left) and Cecile Licad

Franck, lacks weight, and Brahms's music is inherently less amenable than Franck's to her fluid tempos and dynamics.

From an interpretive point of view, Licad and Salerno-Sonnenberg are entirely at one, perhaps because of their long personal association (they were classmates at the Curtis Institute). What a pity, then, that Licad's sensitive playing is obscured by the muffled, indistinct recorded sound. A quick comparison with the recent recording of the Franck by Shlomo Mintz and Yefim Bronfman (Deutsche Grammophon 415 683-2) shows that questions of balance, presence, and piano tone in this repertory are hardly insoluble. Salerno-Sonnenberg and Licad deserve better. Playing time: 54:26. *K. Robert Schwarz*

Fans of Britten will pounce on this record; for various reasons, much of the music on it remains unpublished even today. Fans of Pears will want it, too, if only because it memorializes one of Sir Peter's final appearances, as an audibly old man (seventy-five), disabled by a stroke—no longer singing, as he did so memorably for so long, but expertly and movingly reciting four of the nine Edith Sitwell poems that make up that curious cycle entitled *The Heart of the Matter*.

Lord Britten "devised" that cycle (as John Evans puts it in his notes) for the 1956 Aldeburgh Festival, with himself at the piano, Pears singing, Dame Edith reciting, and Barry Tuckwell handling the horn interpolations—as he does here. The

edited the album, has provided exceptionally honest sound with a good deal of presence, especially in the percussion depart-



HENRY GROSSMAN

Dennis Russell Davies

ment. All in all, Copland is extremely well served by this fine recording, which neatly fills a number of yawning gaps in the Copland discography on CD and belongs in every collection. Playing time: 66:56.

Terry Teachout

HAYDN: Symphonies: No. 94, in G ("Surprise"); No. 95, in C minor.

MOZART, L.: "Toy" Symphony.

① *Hanover Band, Goodman. Nimbus NI 5126 (D).*

HAYDN: Symphonies: No. 100, in G ("Military"); No. 104, in D ("London").

① *Hanover Band, Goodman. Nimbus NI 5096 (D).*

The kindest way to describe these accounts of four of Haydn's "London" Symphonies would be to say that they are fresh but a touch lightweight and undercharacterized. The playing of Roy Goodman's period-instrument Hanover Band (here consisting of a rather hefty 43 players) is tidy, though at times somewhat uncommitted; what really gets in the way of the performances is the engineering. The band's brass section produces an impressively raw and edgy sound that too often is allowed to drown the strings, and the now-familiar "Nimbus sound" vitiates the

players' efforts altogether by blurring the clear textures of the original instruments in a reverberant wash.

The disc coupling Symphonies Nos. 94 (*Surprise*) and 95 with Leopold Mozart's *Toy Symphony* is the less satisfactory of the two. The *Surprise* begins well enough, with crisp and rhythmically vital playing, but its promise is soon compromised by careless phrasing. The second movement, which to Goodman's credit packs quite a surprise, remains nonetheless rather unpleasantly wooden in feeling. In the minuet, Goodman captures the dance aspect perhaps more successfully than any predecessor, though his approach may seem too bracing for some. Symphony No. 95, a more genial work on the whole, fares little better, often sounding lackluster. Again, the third movement has more color, but it is spoiled by some very undistinguished solo cello playing. The *Toy Symphony* is as raucous as I've ever heard it, but the toys are a little overindulged, often obscuring the musical line when the brass section is not already doing so.

Things go generally much more smoothly in Symphonies Nos. 104 (*London*) and 100 (*Military*). The *adagio* introduction to the *London* is given its full weight, and the ensuing *Allegro* flows nicely, although it is a bit lacking in muscle. Goodman does a fine job of bringing out the inner parts in the symphony's finale, but much of this movement's underlying darkness remains hidden. The *Military* receives a perfectly serviceable performance, with a strong and lively opening movement, an *Adagio* that is noble but rather emotionless, and a perky but ultimately lightweight finale. These readings will appeal to listeners largely because they involve period instruments, but the advantages of that arrangement are largely lost in the recording. Caution is advised. Playing times: 60:52 (5126); 50:03 (5096).

Christopher Rothko

JANEQUIN: Chansons (21).

LE ROY: Branle de Bourgogne; Branle Gay.

MORLAYE: Fantaisie; Galliard des Dieux.

① *Debôves; Ensemble Clément Janequin. Michel Bernard, prod. Harmonia Mundi France HMC 901271 (D).* ② *HMA 331271.* ③ *HMC 401271.* (Dist. by Harmonia Mundi, U.S.A.)

Le Caquet des femmes; Va rossignol; D'un seul soleil; Bel aubépin verdissant; J'ay double duel; Au verd boys je m'en iray; Revenés souvent, m'amy; J'ay d'un costé l'honneur; Ce petit dieu qui vole; La Guerre; L'espoir confus; Petite Nymphé folastre; Pourquoi tournés vous vos yeux; C'est a bon droit; Sur l'aubépin qui est en fleur; Ce mois de may; Las, si tu as plaisir; Ventz hardis et légers; Plus ne suys ce que j'ay; Frere Thibault; La Chasse.

JANEQUIN: Chansons (9).

SERMISY: Chansons (8).

MILANO: Las, je m'y plains.

① *Ensemble Clément Janequin. Harmonia Mundi France HMC 901072 (A).* (Dist. by Harmonia Mundi, U.S.A.)

JANEQUIN: Voulez ouir les cris de Paris; Ung mari se voulant coucher; Du beau tétin; Or vien ca; La Bataille; La Meusniere de Vernon; L'amour, la mort et la vie; Martin menoit son porceau; Au joly jeu du pousse avant. SERMISY: Languir me fais sans t'avoir offensée; Je n'ay point plus d'affection; La, la, Maistre Pierre; Secourez moy; Dont vient cela; Jouissance vous donneray; Au joly boys; Tu disoys que j'en mourroys.

ENSEMBLE CLÉMENT JANEQUIN:

"Fricassée Parisienne."

① *Ensemble Clément Janequin. Harmonia Mundi France HMC 1901174 (A).* (Dist. by Harmonia Mundi, U.S.A.)

ANON./ATTAIGNANT: Fricassée. CERTON: Finy le bien. CLEREAU: Comment au départir. COSTELEY: La prise de Calais; Elle criant l'esperon. CREQUILLON: Un gay berger; Petite fleur coincte et jolye. CRESPEL: Fricassée. DELAFONT: A ce matin. GENTIAN: Dieu qui conduictz; Je suis Robert. JANEQUIN: Qu'est ce d'amour?; En m'en venant de veoir; Ung jour Robin. MARLE: Une bergère un jour. NINOT LE PETIT: Mon amy m'avoit promis. PASSEREAU: Il est bel et bon. RIPPE: D'amours me plains. SANDRIN: Douce mémoire. SERMISY: Tant que vivray; Le content est riche; Las, je m'y plains.

Some time back, I wrote an exuberant review of the first disc from this wonderful group that had come my way, *Le Chant des oyseaulx* (Harmonia Mundi HMC 901099). That release took its name from Clément Janequin's best-known single piece, which for most American auditors has linked his name with (if anything at all) birds. Now comes a disc entitled *La Chasse*, including music primarily by Janequin (on it, Claude Debôves intervenes from time to time with brief lute solos by Guillaume Morlaye and Adrien Le Roy), and I found it so hugely enjoyable that I also looked into the two others listed above, which meanwhile had somehow passed me by. Not since the late David Munrow's brilliant Early Music Consort of London have I heard a similar group I would rank even close to these four (occasionally five or six) superlative, jolly French singers.

These selections prove that several other things interested Janequin (c. 1485–c. 1560) considerably more than birds. Repeatedly, his songs resound in joyous, uninhibited praise of sexual intercourse. He also composed entrancingly beautiful works dealing with the rather more courtly variety of love, as well as with such som-

ber themes as the contemplation of mortality. When he gets bawdy, though, as he frequently does, he exults with such infectious, guilt-free zest and glee that it reminds us, all the more forcefully, of the extent to which the puritan ethic came to cheat us out of much of the original, natural richness of life. Any attempt to include here certain samplings from these ebullient texts would prove, I fear, irresistible to the editorial blue pencil.

"*Du beau tétin*" sounds a paean to the female breast (one of its several metaphors: an ivory ball topped with a raspberry or a cherry). "*Ung jour Robin*" rejoices in Robin's heroic penile dimensions, and records Margot's ardently voiced willingness, if she must, to die. On that same low-comedy level, this robust, virile music does not shy away from flatulence, or even from fellatio and buggery, but Janequin's manner of dealing musically with such material, and this ensemble's lusty performance of it, add up to a celebration of life and its compensatory pleasures in a truly rare and delectable musical treat.

On each of these discs, the music selected covers an extensive gamut. At its most elegant, it sets several poems by Pierre de Ronsard and France's versatile King François I. The songs celebrating battles mendaciously gloss over the gore and the killing, of course, and concentrate instead on the more Hollywood-like aspects of such occurrences.

The opening number of the Janequin/Sermisy/Milano album gives us the French equivalent of that better-known work of Janequin's contemporary Orlando Gibbons, *The Cries of London*; the street peddlers of Janequin's Paris (around the rue de la Harpe, which he mentions) hawk brie, cabbage, chestnuts, herring, leeks, lettuce, milk, mustard, peaches, peas, plums, sand, old shoes, spinach, tarts, turnips, waffles, and, of course, wine—all in only 5:46 of delicious music.

One must emphasize a single but considerable qualification to all this fun and games. The excellent accompanying leaflets offer scholarly, entertaining, trilingual introductions (by Jean-Pierre Ouvrard), but they print the songs' texts in French alone—and written French has changed considerably since Janequin died. If you know the language, though, and if you will both read and listen simultaneously, you can understand more than enough at least to get the drift. It makes an enormous difference, but even as pure music these works have power to charm and delight.

Performers, especially in this country, seem to have relegated most music as old as this to the musty, austere atmosphere of the museum. Like Munrow's group in London, the members of the Ensemble Clément Janequin maintain musicological integrity and respect at all times, but

when the material calls for it they can also, with an equal expertise and enthusiasm, transform themselves into a raucous 16th-century barrel of monkeys. Playing times: 63:54 (901271); 49:56 (901072); 54:05 (1901174).
Paul Moor

PÄRT: Passio Domini Nostri Jesu Christi Secundum Joannem.

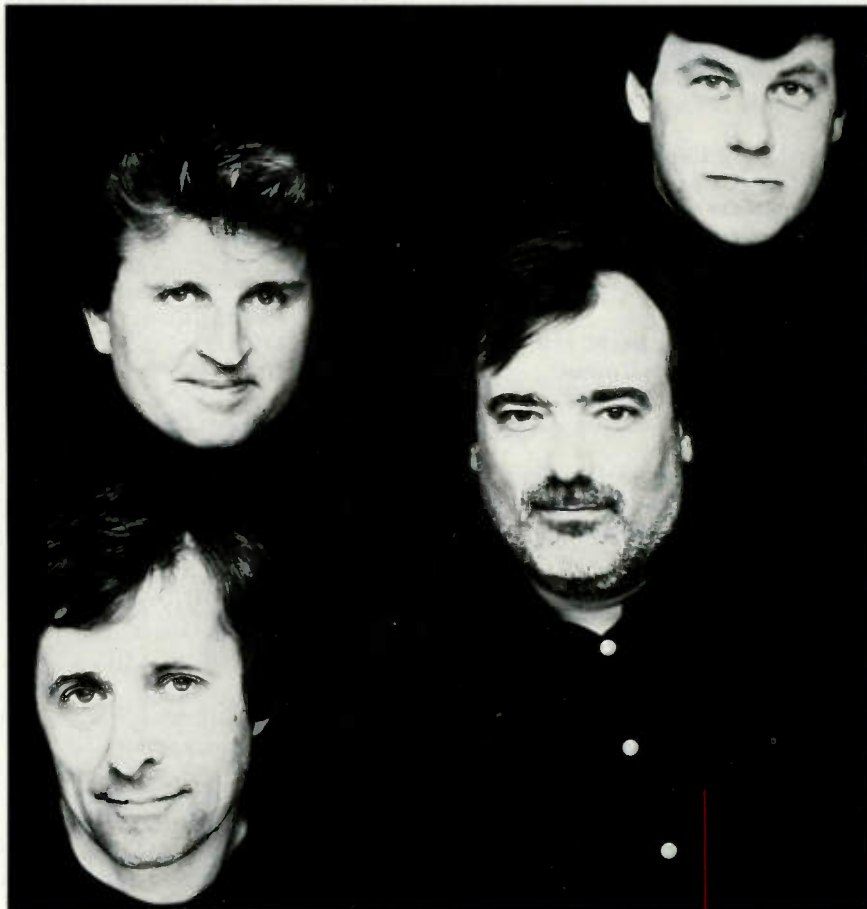
George, Potter; Hilliard Ensemble.
Western Wind Chamber Choir, unnamed instrumental ensemble, Hillier. Manfred Eicher, prod. ECM 1370/837 109-2 (D). □ □ □

The title of this 1982 composition by Estonian-born Arvo Pärt is *Passio Domino Nostri Jesu Christi Secundum Joannem*, and it is, indeed, a treatment of the same text that, in Latin, served as the basis of the familiar masterpiece with which Johann Sebastian Bach marked the end of his first season at Leipzig. Like Bach's, it is less a dramatic than a contemplative Passion setting. In this case, however, the listener's contemplative state is induced not so much by verbal messages contained in interpolated chorales as by the profound solemnity of the music as a whole.

Pärt's *Passio* moves throughout at a deliberately slow pace, its rhythms dictated by the simple alternation of stressed and unstressed syllables in the text, its phrases

separated by telling silences approximately the lengths of breaths taken in meditative repose. The texture is invariably homophonic; the harmonic language is spiced liberally with chromaticism yet nonetheless has the effect of being starkly modal. As in medieval organum, dissonances of extreme pungency tend to resolve into radiantly pure consonances. There is a medieval flavor, too, in the reedy makeup of the instrumental ensemble, which consists of organ, violin, cello, oboe, and bassoon, and which for the most part serves not to accompany but to support and, more significantly, to comment in a tropelike fashion on the singers' lines.

As in Bach's *St. John* Passion, the relatively small roles of Christ and Pilate are assigned in Pärt's work to soloists—in this recording, bass Michael George and tenor John Potter, respectively. For the substantial role of the Evangelist, however, Pärt uses not a tenor but a vocal quartet. The *turba* sections, although never turbulent, are managed by the Western Wind Chamber Choir. Whether isolated or in ensemble, the singing—very much in the lucid, vibratoless style of today's early-music performances—is magnificently intense, and its reverential qualities are only enhanced by the natural resonance of the venue in which the *Passio* was recorded:



The Hilliard Ensemble: early-music purity in Pärt's *Passio*.

St. Jude's-on-the-Hill, in London. Following the example ECM set with its two previous releases of Pärt's work, the sound here is absolutely sublime, but it is the music itself that is the most enduringly awe-inspiring. Playing time: 70:55.

James Wierzbicki



Gennady Rozhddestvensky

STRAVINSKY: Suite from "The Firebird" (1910); Le Sacre du printemps.

London Symphony Orchestra, Rozhddestvensky. Nimbus NI 5087 (D).

This overpowering performance of *The Rite of Spring* gets highest marks, but the original 1910 suite from *The Firebird*, as presented here, comes as a mixed blessing. On the positive side, it luxuriates in the opulent orchestral resources Stravinsky indulged himself in until the comparatively stripped-down suite he made in 1919. Unfortunately, the 1910 suite ends with the "Infernal Dance" and omits two wonderful movements subsequently included: the Berceuse and the finale.

The best news of all: I really believe that of all the conductors I have heard in recordings of *The Rite*, starting with Leopold Stokowski's trail-blazing 78-rpm version with the Philadelphia Orchestra, Gennady Rozhddestvensky does it best of all. He packs it full of sharp, barbaric contrasts, playing it very cool, taking it very easy, until suddenly all hell breaks loose—with electrifying effect. If you want to hear what the crack of doom must sound like, just try those 11 pile-driver chords that bridge the "Mystical Circles of the Adolescents" and "Glorification of the Victim." The London Symphony Orchestra plays as well as any orchestra in the world could, and Nimbus has recorded it with

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phosphorescent brilliance—but for some puzzling reason at an amazingly low level. I can't recall ever having had to set my volume so high for a CD. Until you have heard this *Rite*, you haven't really heard the piece. Playing time: 59:02.

Paul Moor

Recitals and Miscellany

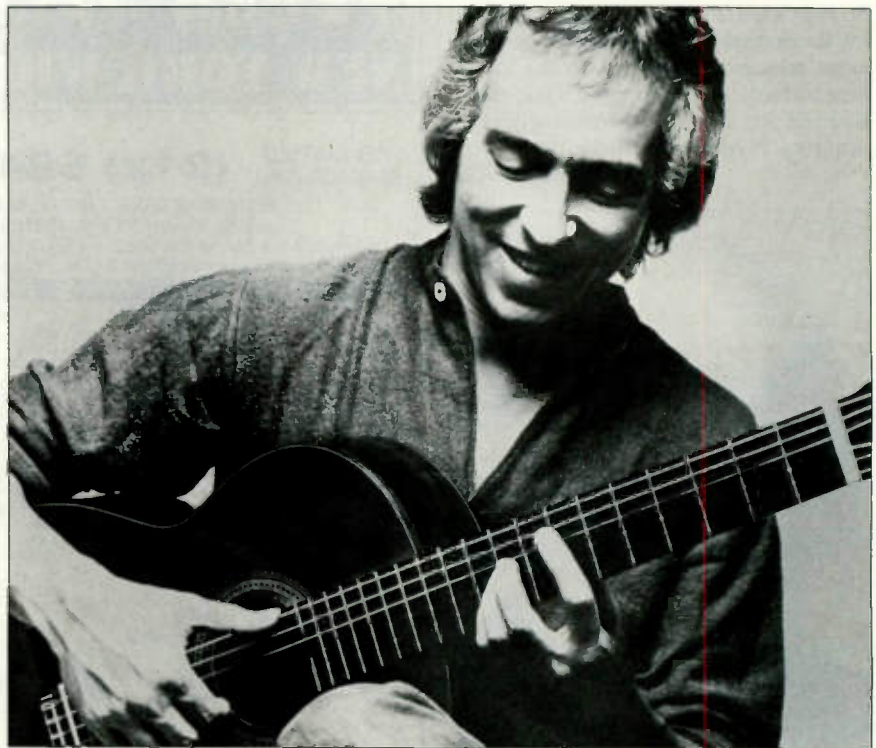
JOHN WILLIAMS: "The Baroque Album."

Williams. John Williams, prod. CBS Masterworks MK 44518 (A). ◉ ◻

BACH: Chaconne, from Partita for Violin No. 2, in D minor, B.W.V. 1004. COUPERIN: Les Baricades mystérieuses (6^e ordre); Les Moissonneurs (6^e ordre). RONCALLI: Passacaglia. SCARLATTI, D.: Sonatas (5): in E, L. 23; in D (tr. from C), L. 104; in D minor, L. 108; in A minor, L. 429; in A, L. 485. TELEMANN: Bourrée alla Polacca. WEISS, S. L.: Fantaisie; Tombeau (sur la mort) de M. Cajetan; Passacaglia.

More than any other contemporary guitar virtuoso, John Williams has explored terrain far from the traditional classical repertory and brought it to the realm of performance. He delights in experimenting, taking the guitar to its limits, as only a true master can. Yet of all his recent CD releases, *The Baroque Album*, featuring music from the heart of that period, represents his finest work.

The pearl of this collection is the Chaconne from Bach's Partita No. 2 for unaccompanied violin, B.W.V. 1004, which composer Mario Castelnuovo-Tedesco once called "the single greatest piece of music ever written." It is a piece that fasci-



John Williams: at his best in music of the Baroque

nated Andrés Segovia, who first transcribed it for guitar. Its 29 variations on a simple sarabande theme—20 in D minor, nine in D major—are a mighty challenge to a guitarist, each calling for the best technique and spirit a performer can muster. From the first moments, Williams grasps the essence of the firm, captivating theme. He eschews the brassy, thrusting character flaunted in some interpretations, while keeping in check the rhapsodic indul-

gences embraced by others. Clearly this is a stirring piece, and Williams's stately, straightforward presentation and flawless rendering of even the most difficult passages combine to produce a calm, masterful intimacy.

The recording conveys a natural ambience within which Williams seems perfectly comfortable. Still, I wonder at the absence of a wider range of timbre; moreover, while the guitarist's thoughtful consideration of the possibilities offered by this stunning piece reflects complete control, he appears to reject too personal an interpretation. Nonetheless, he chooses to use his own transcription, rather than the brilliant, equally demanding one by Segovia. In fact, Williams uses his own transcriptions throughout this collection, and the results are overwhelmingly successful. His treatment of Domenico Scarlatti's Sonata in A minor, L. 429, is surprisingly modern, while his altogether pleasing account of Couperin's *Les Baricades mystérieuses*, which he plays with the sixth string tuned down two whole steps to C, is notable for its impeccable rhythm and clarity.

While many contemporary-guitar collections concentrate on more contemporary music, Williams's homage to the Baroque masters—Scarlatti, Telemann, Roncalli, and Weiss, as well as Bach and Couperin—demonstrates the richness and complexity available in the most classical of material. This anthology reflects the best the solo guitar has to offer. Playing time: 57:53.

Christopher Manion

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VARIOUS ARTISTS: "MUSIQUE DE NOTRE TEMPS: REPÈRES 1945-1975."

Orchestre National de France, Rosenthal¹. Deroubaix, Gazzelloni, Van Gucht, Ricou, Batigne, Singl, Collot; Boulez². Frémy³. Tape⁴. Southwest German Radio Orchestra, Rosbaud⁵. ORTF Soloists and Chorus, Couraud⁶. Alsina⁷. Orchestre National de France, Martinon⁸. Garcisanz, Balet⁹. Swingle Singers; Orchestre Philharmonique, Berio¹⁰. Polish Radio and Television Orchestra, Krenz¹¹. Chojnacka, Sylvestre, Darasse, Gualda, Drouet, Ivaldi¹². Nielsen, Fredricks, Haage, Weller; Nouvel Orchestre Philharmonique de Radio France, Amy¹³. Adès CD: 14122-2 (A, 4). (Dist. by Harmonia Mundi, U.S.A.)

MESSIAEN: Chronochromie¹. BOULEZ: Le Marteau sans maître². CAGE: Daughters of the Lonesome Isle³. SCHAEFFER and HENRY: Symphonie pour un homme seul⁴. XENAKIS: Metastasis⁵; Nuits⁶. STOCKHAUSEN: Klavierstück XI¹. DUTILLEUX: Métales¹⁰. OHANA: Sybille⁹. BERIO: Sinfonia¹⁰. LUTOSLAWSKI: Livre pour orchestre¹¹. BOUCOURECHLIEV: Anarchipel¹². LI-GETI: Scenes and Interludes from "Le Grand Macabre"¹³.



Luciano Berio

This marvelous, discriminating, even-handed anthology fills a gaping hole in the catalog. Here, on only four CDs, are electronically rejuvenated performances of important scores by most of the erstwhile young Turks who dominated Europe's avant-garde during the three decades of fulminant creativity and experimentation that followed the end of World War II. Some of them (André Boucourechliev and Maurice Ohana, as examples) may have escaped your attention; *musique concrète* has meanwhile become one with the saber-toothed tiger; and I personally find the omission of Luigi Nono deplorable and inexplicable—but, all in all, anyone interested in the extraordinary vitality of that period must welcome this generous collec-

tion with enthusiastic applause.

The performances, drawn from a wide variety of recordings made between 1950 and 1987, present some of modern music's greatest virtuosos (e.g., the conductor Hans Rosbaud and the flutist Severino Gazzelloni, both of them legends) at the peak of their careers. Things start off with Olivier Messiaen, that improbable pioneer (a church organist!) whose composition pupils included such enormous but disparate talents as Pierre Boulez and Karlheinz Stockhausen. The more pristine an-

tecedents of French music get their due in the finesse of Henri Dutilleux's work.

Musique concrète involved composing with nonmusical sounds recorded on tape with a microphone. Pierre Henry and Pierre Schaeffer, its originators, have receded into history—but their trailblazing paved the way for true electronic music (which jettisoned the microphone) and for some of the fascinating things done with electronic sound generators by a lengthy list of brilliant young musicians from Paris via Cologne to Warsaw. Any hard-shelled

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holdouts who still denounce avant-garde music as ugly should sample Iannis Xenakis's choral piece *Nights*, a work not only beautiful but also, because of its political context, profoundly moving.

Recording companies willing to take a chance on such music are almost as scarce as hen's teeth. For producing this collection at all, Adès deserves great credit. For producing such a brilliant one, it deserves sincere praise and gratitude. The package also includes an informative, 131-page bilingual booklet. Playing time: 4:00:13.

Paul Moor

VARIOUS ARTISTS: "War's Embers."

Hill*, Varcoe°, George°, Benson. Paul Spicer, prod. Hyperion CDA 66261/2 (D, 2). (Dist. by Harmonia Mundi, U.S.A.)

BROWNE: *Arabia**; *Diaphenia**; *To Gratiana Dancing and Singing**; *Epitaph on Salathiel Pavy**. **BUTTERWORTH:** *Requiescat°*. **FARRAR:** *Vagabond Songs, Op. 10 (The Wanderer's Song; Silent Noon; The Roadside Fire)**; *Brittany°*; *Two Pastorals (Come You, Mary; Who Would Shepherd Pipes)**. **FINZI:** *Only a Man Harrowing Clods°*. **GURNEY:** *In Flanders°*; *Ha'nacker Mill°*; *Black Stichel°*; *By a Bierside°*; *Blaweary°*; *The Twa Corbies°*; *The Fiddler of Dooney°*; *Goodnight to the Meadow°*; *Severn Meadows°*; *Hawk and Buckle°*; *The Ship°*. *The "Elizas" (Orpheus; Tears; Under the Greenwood Tree; Sleep; Spring)**; *The Boat Is Chafing°*; *Cathleen ni Houlihan°*; *Edward, Edward°*; *The Night of Trafalgar°*; *Even Such Is Time°*; *Thou Didst Delight My Eyes°*; *Most Holy Night°*; *You Are My Sky°*; *Last Hours°*; *To Violets°*; *Nine of the Clock°*; *Epitaph in Old Mode°*. **KELLY:** *Shall I Compare Thee?*

W. Denis Browne. George Butterworth. Ernest Farrar. Gerald Finzi. Ivor Gurney. Frederick Kelly. Some of them might well have become as familiar to us today as Benjamin Britten. All fell victim, in one way or another, to World War I, between 1914 and 1918. It killed a total of more than 13 million people, including at least 800 writers and composers of all nationalities. Browne died at twenty-six. Kelly made it to thirty-five. Finzi (1901-1956) studied with Farrar, killed at thirty-three. (The Finzi Trust has subsidized this admirable set.) Ivor Gurney actually survived the war itself, but only in a manner of speaking. Wounded by a bullet, gassed, he returned to England to study with Ralph Vaughan Williams, but his increasingly eccentric behavior and repeated threats of suicide landed him in an asylum, where he vegetated for 15 years before death finally released him in 1937, forty-seven years old.

It seems incredible to those of us whose fathers went off full of high purpose and idealism to fight that war "to end all wars,

to make the world safe for democracy," that on November 11, 1988, 70 years had passed since it ended. Those who set off full of idealism almost invariably returned traumatized and profoundly embittered—if they returned at all. To mark this solemn anniversary, Hyperion, in a characteristic gesture, has brought us this collection of songs by a selection of British composers who became casualties of that barbarous stupidity. Here they set such poets as Belloc, Bridges, Graves, Hardy, Herrick, Lovelace, De la Mare, Masefield, Nashe, Raleigh, Rossetti, Shakespeare, Stevenson, Symons, and Yeats—in many instances heartbreakingly (e.g., Butterworth's setting of Wilde's fanciful, lovely poem to his dead sister: "Tread lightly, she is near/ Under the snow,/ Speak gently, she can hear/ The daisies grow"). All four performers—tenor Martyn Hill, baritone Stephen Varcoe, bass Michael George, and pianist Clifford Benson—rise worthily to the occasion.

What might have been. . . *Requiescant in pace*. And may the world never forget. This splendid tribute at least helps to assure that. Playing time: 117:38.

Paul Moor

Theater and Film

BARBARA COOK: *The Disney Album*.

Cook; unnamed studio orchestra, Harper. Thomas Z. Shepard, prod. MCA MCAC 6244 (D). ●●

CHURCHILL and MOREY: *With a Smile and a Song; Some Day My Prince Will Come (Snow White and the Seven Dwarfs)*. **CHURCHILL and WASHINGTON:** *Baby Mine (Dumbo)*. **WALLACE and WASHINGTON:** *Pink Elephants on Parade; When I See an Elephant Fly (Dumbo)*. **HARLINE and WASHINGTON:** *Give a Little Whistle; When You Wish Upon a Star (Pinocchio)*.

WOLCOTT AND GILBERT: *Sooner or Later (Song of the South)*. **WRUBEL and GILBERT:** *Zip-a-dee-doo-dah (Song of the South)*. **DANIEL and MOREY:** *Lavender Blue (So Dear to my Heart)*. **DAVID, HOFFMAN, and LIVINGSTON:** *A Dream Is a Wish Your Heart Makes (Cinderella)*. **FAIN and HILLIARD:** *I'm Late (Alice in Wonderland)*. **FAIN and CAHN:** *The Second Star to the Right (Peter Pan)*. **ROBBINS and CONNORS:** *Someone's Waiting for You (The Rescuers)*.

Barbara Cook sings Disney? Sounds incongruous, on the face of it—the suave, soignée, urbane Miss Cook lending her laid-back air to all those treacly little ditties from the Technicolor world of animated Walt Disney cartoons. Still, in a New York revival and on records she did make a totally plausible Julie in *Carousel*, as well as (in other revivals) an affecting Anna in

The King and I and a touching Magnolia in *Show Boat*. There is, after all, a heart-throb element in the talents of this honey-voiced lady who created the role of the indestructible Cunegonde in Leonard Bernstein's *Candide*; she can make you cry as well as snicker. Besides, the arranger for *The Disney Album* is none other than Wally Harper, who did the honors (and wrote the title song) for *It's Better with a Band*—the recording of which has been worn threadbare with replaying around our house. So it seemed, just maybe, that Cook might be the one to lower the calorie count of those syrupy songs and make the whole thing work.

I have listened to *The Disney Album* several times now and have seen it going like microwave hotcakes in the record stores, but as far as I'm concerned, the answer is still "Maybe." Cook doesn't do anything quite so extreme as trying to sing the parts of all seven dwarfs in *Snow White*, but she is joined by "The McCook Trio"—made up of Barbara Nelle Cook, Boreala Carbonkle, and Leona Blab-croaker—which, you may rest assured, are all Barbara herself being overdubbed, in a sticky, spun-sugar arrangement of "When I See an Elephant Fly" from *Dumbo*; it's enough to make you airsick. Indeed, by the time the program has run its course, what with the pink elephants, the handkerchief-head sham exuberance of "Zip-a-dee-doo-dah" from *Song of the South*, and bathetic ballads on the order of "Baby Mine," "The Second Star from the Right," and "Someone's Waiting for You"—the last from a movie that must have sneaked into town and out again called *The Rescuers*—not to mention the swooning banks of strings and harp glissandos shamelessly furnished by the album's three orchestrators . . . well, by the time these excesses have piled up, *The Disney Album* could prove to be a dangerous indulgence for any sugar addict over the age of twelve.

On the other hand—and it is a shapely other hand—when Cook applies what remains of her fairly radiant soprano and the heartstring-plucking side of her skills to the wistful charm of such enduring favorites as "When You Wish Upon a Star" from *Pinocchio*, "Lavender Blue" from *So Dear to My Heart*, and even Snow White's cloying "Some Day My Prince Will Come" as well as Cinderella's cavity-causing "A Dream Is a Wish Your Heart Makes," she remains irresistible. In the good, clean fun department, she also makes the most of Jimmy Cricket's "Give a Little Whistle" and "I'm Late," the song of the Type-A rabbit from *Alice in Wonderland*. All said, however, *The Disney Album* ought to have been labeled "Hazardous for Diabetics." Playing time: 42:50.

Paul Kresh



MINI-REVIEWS OF THE LATEST COMPACT DISCS

By Robert E. Benson, David Hurwitz, Paul Moor, Robert R. Reilly, Christopher Rothko, and James Wierzbicki

**DVOŘÁK, SMETANA, LISZT:
FRICSAY, BERLIN**

Ferenc Fricsay was a superlative conductor. This midprice CD of music by Dvořák, Smetana, and Liszt makes a marvelous tribute to his art and belongs in every collection. Fricsay's interpretation of Dvořák's *New World* Symphony, heard here with the Berlin Philharmonic, was always one of the best. His fluctuations in tempo, especially in the scherzo, offer an object lesson in the Romantic school of conducting: Each transition is carefully prepared, every new tempo relates to what has preceded it, and the result—paradoxically—has extraordinary spontaneity and freshness. Smetana's *The Moldau*, with the same orchestra, moves like quicksilver, gathering depth and excitement as it goes. The sense of momentum never entirely disappears, not even in the haunting nocturne. Finally, Liszt's *Les Préludes*—which, in the wrong hands, can seem one of the trashiest pieces in existence—sounds every bit as noble as the composer no doubt intended. This Berlin Radio Symphony account is, to my knowledge, the best performance of the work on records. The sound on the disc is slightly hard and flat but perfectly listenable. Now how about a box of Fricsay's Bartók? Playing time: 72:14. (Deutsche Grammophon 423 384-2.) *D.H.*

**VICTORIA MOTETS, MASS:
WESTMINSTER CHOIR, HILL**

There is little question that the Choir of Westminster Cathedral has become one of the premier English ensembles of its kind, and this recording of sacred works by the Spanish composer Tomás Luis de Victoria (c. 1548–1611) shows the group at its best. The Westminster Choir produces a less characteristically "English" sound than many of the college choirs—the boys' tone is less bright and thin (and sharp) than is the norm. On this, the group's fourth disc of Victoria masses, the singing is superbly controlled and the pieces carefully sculpted by director David Hill. Four Marian motets and a hymn open the recording and ultimately steal the show from the *Missa Vidi speciosam*, which follows. There is a fine sense of flow and momentum to the *Ave, maris stella*, with contrasting sections of chant and polyphony that vary the work's texture. The choir makes the plaintive quality of the *Sancta Maria, succurre*

miseris truly palpable, while capturing the poetry of the motet *Vidi speciosam*, whose striking text is from the Song of Songs.

The *Missa Vidi speciosam*, based on the same tune as the motet, is an attractive work, but it ultimately lacks the depth of feeling and harmonic richness of the motets and of some other masses by Victoria. Rather direct and declamatory in style, the work is constantly moving forward, a trait underscored by the quick tempos chosen by Hill. This is particularly true in the *Kyrie* and *Credo*, which at times seem a bit breathless, although the rhythmic propulsion lends these movements a good deal of power. The boys seem to tire as the piece proceeds, especially toward the end of the *Credo*, where the singing becomes a little untidy. A simple but deeply moving *Agnus Dei* concludes the work on a very peaceful note, and in this movement the choir returns to its earlier fine form. The recorded sound is very good, although a shade too close. Playing time: 45:09. (Hyperion CDA 66129. Dist. by Harmonia Mundi, U.S.A.) *C.R.*

**SOLTI, BOSKOVSKY:
OVERTURE COLLECTION**

Here is one of the best buys in London's Weekend Classics series: a collection of eight popular overtures, all given sterling performances. Sir Georg Solti recorded the four Suppé overtures on this disc in 1959, just after completing his pioneering recording of Wagner's *Das Rheingold*, and the same sonic quality that distinguished the Wagner is evident here. It is a pleasure to hear the Vienna Philharmonic romping through these delectable overtures: *Light Cavalry; Poet and Peasant; Morning, Noon and Night in Vienna*; and *Pique-Dame*.

Coupled with the Suppé are three overtures perfectly suited to conductor Willi Boskovsky, again with the Vienna Philharmonic: Nicolai's *The Merry Wives of Windsor*, Reznicek's *Donna Diana*, and Johann Strauss's *Die Fledermaus*. These originated on a 1969 London deluxe double-fold album entitled *Viennese Spectacular*, which also contained Strauss's Overture to *Prinz Methusalem* and Richard Heuberger's Overture to *Der Opernball*. It is a mystery why these two weren't included on this CD, since both would have fit. All the same, Solti's Suppé overtures once occupied two sides of a full-priced LP. Now we have all of them, plus the three

Boskovsky items, for about \$7. This, indeed, is progress! Playing time: 60:00. (London 421 170-2.) *R.E.B.*

**MARTINŮ CHAMBER WORKS: NOVÁK,
SKAMPA, SMETANA QUARTET**

If, in Colette's phrase, Bach is a "celestial sewing machine," then Bohuslav Martinů is a terrestrial one. This is not to denigrate the earthly delights his best music affords, but there is no denying that his less inspired efforts have a kind of mechanical hum about them. Happily, such is not the case with his brilliant Piano Quintet No. 2 (1944) and the Three Madrigals for Violin and Viola (1947), played, respectively, by the Smetana Quartet with Josef Páleníček and by Jiří Novák and Milan Skampa on a recent Supraphon CD. These are two glorious chamber works of Martinů's maturity, certainly of comparable quality to his symphonies. Both pieces were written in New York, but the inspiration and sound remain Czech. The textures are light, the lyricism highly affective, and the drama pungent. The Piano Quintet is a substantial, half-hour piece. The madrigals are among the very best works for violin/viola duo; this is a very exposed kind of writing, and Martinů is not found wanting.

The performances, which date from 1983 and 1985, are fully idiomatic and deeply committed. The remastered analog sound is very fine, but with an occasional hint of shrillness. Playing time: 43:44. (Supraphon C0 2049. Dist. by Qualiton Imports, Ltd.) *R.R.R.*

**SATOH "MANTRA," STABAT MATER:
SATOH, PRO ARTE CHORALE**

The 1987 *Stabat Mater* of Japanese composer Somei Satoh is a major addition to the contemporary choral literature, a subtly colored and expertly paced work whose impact—as well as its idiom of slow glissandos and vapory tone clusters—is comparable to that of Penderecki's similarly titled masterpiece from 1962 or Ligeti's 1966 *Lux aeterna*. Satoh is a Buddhist, and he regards his *Stabat Mater* not as a religious piece but as a simple humanitarian statement; he says that when he first encountered this text he associated it with an image of a starved African child held dead in the arms of its vacant-eyed mother, and thus the piece is dedicated to women everywhere who have lost children to war, starvation, illness, and sudden acci-

dent. Whatever its inspiration, the music seems deeply felt, and its emotional effect—the result of expressive intensity accumulated quietly over the course of 33 minutes—is awesomely powerful. The able and apparently committed performers here are soprano Jane Thorngren and the Pro Arte Chorale under the direction of George Manahan. As was the case when the *Stabat Mater* was premiered at the Church of St. Ann and the Holy Trinity in New York in April 1987, on the disc it is preceded by Satoh's 1986 *Mantra*, a peacefully noneventful meditation made entirely of (electronically manipulated) layer upon layer of the composer's overtone-rich chanting. Playing time: 56:41. (New Albion NA 016.) J.W.

DEBUSSY, RAVEL QUARTETS: QUARTETTO ITALIANO

In years past, the Quartetto Italiano's coupling of the Debussy and Ravel string quartets held pride of place in the LP catalog until it was unseated by the Melos Quartet's performances on Deutsche Grammophon (also available on CD). This midprice reissue gives the Italians a cost advantage, however, and the high-level CD transfer brings the music a bit more vividly to life than did the LP. Musically, the Quartetto Italiano performances are as fine as any, so this disc makes an excellent and economical way to get acquainted with these splendid works. Playing time: 59:36. (Philips 420 894-2.) D.H.

LIGETI ANTHOLOGY: VARIOUS ARTISTS

The West German Wergo label's 1984 reissue in a handsome boxed set of selected masterpieces by the Hungarian-born modernist György Ligeti was one of the landmark events of the first half of this decade. Apparently all five LPs included in that deluxe edition are now available as single CDs, although to date I have yet to get my hands on the one that contains the 1962 *Aventures*, its 1965 sequel *Nouvelles Aventures*, and, also from 1965, the Requiem. But who's complaining? What I do have amounts to a more-than-full survey of the delicately textured, dramatically shaped products from the early and middle years of Ligeti's career. It includes the 1954 and 1968 string quartets, played by the Arditti Quartet, on WER 60079-50; the *Chamber Concerto* (1970), the versions for both orchestra and solo string players of *Ramifications* (1969), the *Lux aeterna* for chorus (1966), and *Atmosphères* for orchestra (1961), on WER 60162-50; *Continuum* for harpsichord (1968), the *Wind Quintet* (1968), the 1957 and 1958 *Artikulation* and *Glissandi* for electronic tape, the 1967 and 1969 *Études* for organ, and *Volumina* (1962), also for organ, on WER 60161-50; the Cello Concerto (1966), *Lontano* for

orchestra (1967), the *Double Concerto* for flute, oboe, and orchestra (1972), and *San Francisco Polyphony* for orchestra (1974), on WER 60163-50. And the CD format, although it doesn't really improve the sound of the analog originals, at least makes playing the recordings more convenient. Playing times: 53:53 (60161-50); 54:48 (60162-50); 46:24 (60163-50); 42:37 (60079-50). (Dist. by Harmonia Mundi, U.S.A.) J.W.

SIBELIUS SONGS FOR MALE CHORUS: HELSINKI UNIVERSITY CHORUS

Unless you have a heart of stone, the very first item on this disc—Sibelius's choral arrangement (Op. 26, No. 7), with words written for it by V. A. Koskeniemi, of the hymn that closes his fervently patriotic *Finlandia*—will hook you. The remarkable men's chorus of Helsinki University has the creamy, homogenized sound of a fine organ; even two fragmentary solos (by tenor Peter Lindroos and baritone Pertti Saurola) stand out as unusually high in quality. The chorus sings all 25 of these choice works a cappella except for "March of the Hunters," where the Helsinki Garrison Band joins in, and all of a sudden the group sounds (ironically, in view of World War II) like the Chorus of the Red Army.

The Helsinki chorus has sung Sibelius's music since 1893; one can surely regard these interpretations as definitive. One song is sung in Latin, the rest in either Finnish or Swedish; the excellent leaflet provides original texts plus good English translations. Playing time: 68:19. (Finlandia FACD 205 S. Dist. by Harmonia Mundi, U.S.A.) P.M.

MAHLER WORKS FOR ORCHESTRA AND VOICE: LUDWIG, PHILHARMONIA

It's becoming increasingly obvious that EMI dislikes selling records. Why else would the company release this, perhaps the finest Mahler recital ever compiled, with no texts at all? Maybe the reason is economics. . . . This disc competes directly with Janet Baker's full-price recital on the same label, which contains virtually the same repertory. But Christa Ludwig sings the *Songs of a Wayfarer* better than Baker does, and Sir Adrian Boult's impulsive conducting here surpasses Sir John Barbirolli's loving but slack support for Baker. Ludwig has the same advantages in her *Kindertotenlieder* with André Vandernoot. Baker, however, remains unsurpassed in the complete *Rückertlieder*; Ludwig, though equally lovely, and backed by Otto Klemperer at his best, offers only three of these songs ("Ich bin der Welt abhanden gekommen," "Um Mitternacht," and "Ich atmet' einen Linden Duft"), along with two from *Des Knaben Wunderhorn* ("Das irdische Leben" and "Wo die schönen Trompeten blasen").

Apparently, EMI feels that a midprice release does not warrant full documentation. In this it differs from every other major record company. Playing time: 68:14. (Angel EMI CDM 69499.) D.H.

ŠTĚPÁN RAK: "REMEMBERING PRAGUE"

This is a collection of strong personal statements from a forty-three-year-old Czech artist who seems bound and determined to resist his fellow guitarists' current mania for transcriptions. Three of these compositions—*First Love*, *Hiroshima*, and *The Czech Chorale*—are tone poems of considerable length, based largely on deft shapings of tone clusters and potentially expressive percussion effects. The shorter pieces tend to be tonal and tuneful, and what they borrow from preexisting music (ethnic dance rhythms in *Hora* and *Danza Mauretana*; 17th-century harmonic patterns in *Pavanne*; echoes of Tárrega's *Recuerdos de la Alhambra* in the Lorca-inspired *Cry of the Guitar*; Slovakian folk-song in *Remembering Prague*) stands in neat balance with Rak's sometimes quite daring original ideas. Whether working on the small scale or the large, Rak manipulates musical form as confidently as he handles his instrument. The music as well as the performance is engaging, and the recorded sound is deliciously pure. Playing time: 50:27. (Chandos CHAN 8622. Dist. by Koch Import Service.) J.W.

STRAUSS "METAMORPHOSEN," "GENTILHOMME": JORDAN

Intense, admiring familiarity with Fritz Reiner's old Pittsburgh recording of Richard Strauss's *Le Bourgeois Gentilhomme* Suite and with Herbert von Karajan's Berlin recording of the *Metamorphosen* had left me thinking that they had said the final words on those two subjects, but these fine performances give rise to second thoughts. The suite of incidental music to Molière's great satire has remained something of a stepchild among Strauss's important orchestral works, but possibly because few conductors have taken the pains to mine it as thoroughly as Armin Jordan does here, in a performance by the Paris Orchestral Ensemble. Certainly he discovers gemlike details that even the great Reiner left undisclosed.

Strauss gave his elegiac *Metamorphosen* the subtitle "for 23 solo stringed instruments," but in every performance I've heard up to now the conductor has homogenized them into a conventional string orchestra. Jordan, mainly by paying exceptional attention to intermediate voices, particularly violas, lets the expert instrumentalists of the Lausanne Chamber Orchestra really sound like soloists, and it transforms the music. Playing time: 65:45. (RCA Erato ECD 75398.) P.M.



Schnabel: Stylish As Ever on CD

By Terry Teachout

Throughout the early years of the Compact Disc, virtually all of the major labels operated on the assumption that CD buyers were primarily interested in digital sound, a commodity that no historical recording, whatever its other virtues, can offer. But now that the Compact Disc has become the medium of choice for classical record buyers of all tastes, historical reissues on CD make more sense—and, not surprisingly, they have recently begun to appear, digitally remastered, in significantly larger numbers.

Arabesque, for example, has just brought out cleanly transferred CD versions of Artur Schnabel's complete studio recordings of Mozart (Arabesque Z6590/93). Schnabel recorded more Mozart than is generally realized: five major piano concertos, the two-piano concerto (with his son, Karl Ulrich), two of the solo sonatas and the Rondo in A minor, and the Piano Quartet in G minor. In addition, Arabesque has unearthed a previously unreleased 1946 recording of the Sonata in F, K. 332. This is the company's third Schnabel reissue package on CD, and one hopes that it won't be the last. Schnabel's recordings of the Brahms concertos and the Schumann and Dvořák piano quintets have not been available in the United States, even on LP, for decades.

Schnabel's stylish, unsentimental approach to Mozart is thrown into sharper relief by the playing of his collaborators. The London Symphony Orchestra of the late 1930s was a second-rate band with a portamento-laden conception of Mozartean style, while the Philharmonia Orchestra of 1946 was not yet the smooth, Karajan-polished ensemble of legend. Similarly, members of the Pro Arte Quartet, who join Schnabel in the Piano Quartet in G minor, play charmingly but with little of Schnabel's grit and high seriousness. One learns from Denis Matthews's thoughtful liner notes that Schnabel appeared at the 1947 Edinburgh Festival with violinist Joseph Szigeti, violist William Primrose, and cellist Pierre Fournier. If only Walter Legge had recorded him with that group. . . .

As it happens, Szigeti himself has finally turned up on CD: Vanguard has reissued a famous recital given by the violinist and Béla Bartók at the Library of Congress in 1940 (VCD 72025). [*Two discs devoted to Szigeti were produced by Philips several years ago, but were never released in the United States.—Ed.*] The program is quintessential Szigeti: Bartók's Second Sonata and First Rhapsody, the Debussy Sonata, and Beethoven's *Kreutzer* Sonata. Szigeti's playing is lean, astringent, and gripping. Bartók is in equally fiery form, and this recital is the most extended example of his work as a pianist to survive on record. The sound is tolerable but primitive. Perhaps CBS will now get around to bringing out CD versions of some of the unforgettable concerto recordings that were included in the 1972 anthology *The Art of Joseph Szigeti* (M6X

31513). Don't count on it, though. So far as I know, CBS has issued exactly one historical CD to date.

Fortunately, a number of smaller record companies, such as Pearl, Arabesque, and Price-Less, are licensing historical material from less ambitious major labels for reissue on CD. The latest historical CD from Price-Less is Bruno Walter's 1936 version of Mahler's *Das Lied von der Erde* with the Vienna Philharmonic (D19122), originally recorded in concert by Fred Gaisberg for HMV. The very first recording of *Das Lied von der Erde*, it remains one of the most convincing, thanks in large part to the superb singing of Charles Kullmann and Kerstin Thorborg and the magnificently old-fashioned playing of the prewar Vienna Philharmonic. Walter's conducting, despite occasional lapses into sentimentality, remains *sui generis*, and his interpretive eccentricities should be balanced against the fact that he worked closely with Mahler and conducted the first performances of *Das Lied* shortly after the composer's death in 1911.

No such claim can be made for Wanda Landowska's Bach, though she doubtless felt that she had an equally direct spiritual pipeline to her favorite composer. One can almost believe it when listening to the recordings of the *Goldberg* Variations, the *Italian Concerto*, and the Chromatic Fantasy and Fugue, all recorded between 1933 and 1936 and reissued as part of Angel EMI's "Great Recordings of the Century" series in rather uneven transfers by Keith Hardwick (CDH 61008). Landowska's wildly extravagant interpretations of Bach were about as authentic as her iron-framed Pleyel harpsichord. Still, great performances, however idiosyncratic, justify themselves, and Landowska's Bach—with its bold, thrusting rhythms and superb self-assurance—remains unique and essential. EMI has much more Landowska material in its vaults, of course, and her Couperin and Scarlatti recordings are no less memorable.

To end on a lighter note, let me recommend a delightfully unexpected midprice reissue from that company, *Yvonne Printemps: Airs et Mélodies* (CDM 69541, a Studio series release), a collection of recordings by the French musical-comedy star for whom Noël Coward wrote *Conversation Piece*. These performances, recorded between 1929 and 1943, capture Printemps at her most effervescent. The fare ranges from Offenbach to Reynaldo Hahn. Francis Poulenc and Jean Anouilh wrote the waltz-song "*Les Chemins de l'amour*" for Printemps, and her 1941 recording of it with orchestra is included on this disc. It's as good as a second glass of champagne. □

Terry Teachout, for the past several years a regular contributor to HIGH FIDELITY's classical review section, joins the ranks of our columnists with this issue. His commentaries, slated to appear every other month, will deal with significant historical reissues on Compact Disc.—Ed.

SPECIAL

 REPORT

a year later, Guthrie had recorded, for the first time, many of his most memorable songs and had walked into and out of the most lucrative network radio gigs of his life.

The recordings from this rich period of concentrated activity, only sporadically available over the nearly 50 years since they were cut, have now been released on Compact Disc, thanks to a Rounder reissue series that is both wonderful and troubling, rather like its subject. But if all you know are other people's versions, like those on *Folkways: A Vision Shared*, then you owe it to yourself and history to hear Woody.

In late March of 1940, Guthrie visited the young folklore mogul Alan Lomax in Washington, D.C., where they cut the **Library of Congress Recordings** (Rounder CD 1041/2/3), three hours of Woody talking and singing, encouraged (as if that were necessary) by a credulous Lomax plainly enthralled by this pure product of America that had just blown his way (as, in all fairness, I would have been, too). Starting with traditional ballads and dance tunes ("Rye Whiskey," "Old Joe Clark," "Greenback Dollar") in-

terspersed with flavorful tales of growing up in Okemah, Oklahoma, and a dreadful catalog of family misfortunes, Woody moves on to dust storms and homelessness and the new tunes he'd written about the travails of the Okie refugees, finishing in California (where he's "slept under every important bridge there") with a lot of faith in the people but not much else.

On May 3, through Lomax's recommendation, Guthrie recorded his masterpiece, **Dust Bowl Ballads** (CD 1040), at the RCA studios in Camden, New Jersey. There are so many virtues in these 13 songs, simply accompanied by his guitar and occasional harmonica, that they seem very nearly perfect today. Though I thought I committed this work to memory long ago, Woody's projection, his constantly inventive phrasing and pronunciation, and his gritty, dry-eyed humor in the face of unrelenting misery still amaze me, and his direct, unmannered *Grapes of Wrath* synopsis, "Tom Joad," still gives me chills. The definitive versions here—"I Ain't Got No Home," "Pretty Boy Floyd," "Blowin' Down the Road (I Ain't Going to Be Treated This Way)," "Do Re Mi," "Dusty Old Dust (So Long, It's Been

Good to Know Yuh)"—make *Dust Bowl Ballads* an essential document in the history of American music.

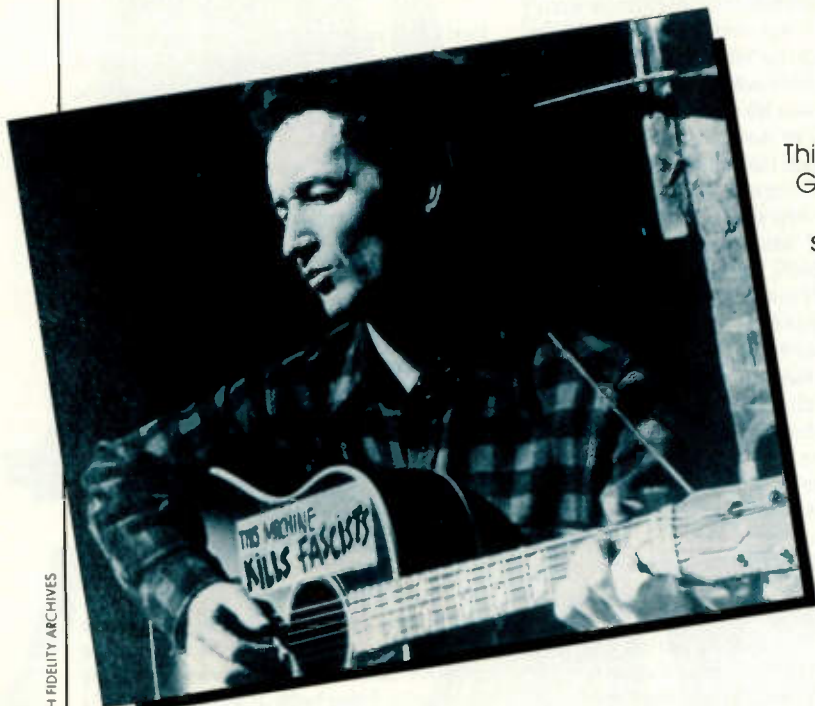
The late spring of 1941 found Guthrie back on the West Coast and scrabbling for work. Through friends, he got a month's worth of government employment writing a song a day celebrating the Grand Coulee Dam project and the attendant glories of hard work and rural electrification. **Columbia River Collection** (CD 1036) represents what survives of this somewhat breathless effort, simultaneously major and minor. A few of the 17 tracks here—especially "Ramblin' Round," "Hard Travelin'," and "Pastures of Plenty"—are pantheon Woody, and several more (including "Oregon Trail," "Roll Columbia, Roll," and "Washington Talkin' Blues") are quite fine examples of his songwriting skills.

The very importance of the material on these CDs leads me to what is disappointing about this reissue series. Rounder, which likens itself (not unfairly) to a latterday Folkways, has done almost nothing to prepare or distinguish these releases. The sound reflects none of the improvements now possible during digital transfer. Though the *Library of Congress* and *Columbia River* recordings were done under less than ideal circumstances, they still sound worse than they should, and there is simply no excuse for the amount of hiss, crackle, and pop on the RCA studio cuts that comprise *Dust Bowl Ballads*.

Just as upsetting is the haphazard, poorly edited, and outdated documentation. In all three cases, Rounder simply used whatever had been last prepared for LP release. The annotation for the three-disc *Library of Congress* set consists merely of a 25-year-old anecdotal remembrance by Lomax; *Dust Bowl Ballads* contains a radical reduction of Guy Logsdon's lengthy essay in the 1977 RCA release on LP; *Columbia River* has a breezy, unsigned track-by-track rundown with almost no information on where or when the tracks were written (some obviously before Guthrie got to the Northwest) and recorded (some obviously later, using additional players). This music is simply too important for such shabby treatment to be acceptable.

Jeff Nesin

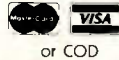
(Continued on page 80)



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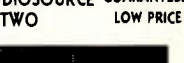
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SPECIAL
CD
REPORT

PORTRAIT MASTERS JAZZ

There are several refreshing aspects to CBS's new series of jazz reissues under the title Portrait Masters. It is an impressively varied project, with artists ranging from Duke Ellington and Louis Armstrong to Herbie Mann, and it already includes several out-of-print recordings by great musicians at the beginnings of their careers, such as the Artie Shaw, Dave McKenna, and Phil Woods CDs under review here. It's equally gratifying that series producer Bob Thiele has decided to release a blues disc with each batch of Portrait Masters.

One of the blues CDs, *I Ain't No Bad Gal* (Portrait RK 44072), contains songs recorded in 1941 by one of the few female stars of country blues, Memphis Minnie. Included are four previously unissued songs, which should attract collectors—but everyone should hear Minnie's glad-hearted, double-entendre blues. That undercurrent of mirthful good times runs through even her saddest statements. Minnie has a taut, almost metallic voice; she's

also an excellent guitarist with a distinctively plaintive twang and an infectious rhythmic bounce, as we hear on her hit record, the delightful "Me and My Chauffeur Blues."

This remains a jazz series, however, and the swing era is represented by three discs. Artie Shaw's *Free for All* (RK 44090), containing tracks he made for the Brunswick label in 1937 before his "Begin the Beguine" unexpectedly launched him to stardom, features his second band, which he called Artie Shaw and His New Music. The qualities that made Shaw famous are here: the fine repertoire of sophisticated tunes in uncluttered arrangements, as well as Shaw's translucently inventive clarinet-playing, heard on "Night and Day," "All Alone," "The Chant" (his version of "St. James Infirmary"), and the first recording of his spell-binding theme, "Nightmare."

Nothing could be further from the suavity of Shaw's arrangements than what Louis Armstrong had to put up with in 1931 and 1932, when he played incandescently before a crude-sounding ensemble

whose only purpose was to state the melodies—the musicians tended to do this en masse, huffing as they went along—and then get out of the way of Armstrong's trumpet and vocals. On *Stardust* (RK 44093), it's astonishing to hear what Armstrong could do in the face of such daunting odds, transforming the title track (heard here in two takes) with irreverent vocals and dramatic trumpet choruses, creating an affecting "Georgia on My Mind," and injecting some much-needed humor into Nat Shilkret's dismal "The Lonesome Road." That's genius for you.

Duke Ellington's was a totally different kind of genius: He had an ability to transform not melodies but players, who instantly became more interesting in his presence. The fascination of the small-band recordings on *Back Room Romp* (RK 44094), made with shifting personnel from 1936 to 1939, is in the varying sounds he gets out of his ensembles, depending on whether he wanted to feature the frolicsome clarinet of Barney Bigard ("Caravan"), the lush alto of Johnny Hodges (a classic version of "Pyramid"), or the threateningly dark, growing trumpet of Cootie Williams ("Echoes of Harlem"). Regrettably, it's difficult to fully appreciate Ellington's accomplishment when the CD booklet lacks a complete personnel listing for each track. Surely, listeners will want to know that the Bigard cuts feature trombonist Juan Tizol, who is then replaced by Lawrence Brown on Hodges's numbers. And I think everyone will be interested to know that Billy Strayhorn, not Ellington, plays on "The Rabbit's Jump." Though the sound on most of the Portrait discs is sparkling, the Ellington seems muffled, even compared with the LP versions of the same tracks.

Caught between eras—he was only two years older than Dizzy Gillespie—cornetist Bobby Hackett never got his due. He was a sophisticated swing-era player whose harmonic invention was appreciated by the younger generation: Gillespie praised his chords, Miles Davis applauded his way of stating a melody. *That Da Da Strain* (RK 44071) has some of his best work, including "Embraceable You" (made with his ill-fated big band), the lightly sensuous "(I Don't Stand) A Ghost of a Chance with You," and the unexpect-

■
Though the Portrait CDs usually lack complete personnel listings, the music is often fine: Hear the vintage Armstrong (shown c. 1930).



SPECIAL

 REPORT

edly affecting "Ja-Da." Again, personnel rosters, which vary from cut to cut, are not listed—and listeners will want to know whose exquisite clarinet they are hearing on the selections "Doin' the New Low-Down" and "Sunrise Serenade." (It's Pee Wee Russell's.)

The small-group Portrait Masters include 1959's **This Is the Moment** (RK 44091), by Hackett's frequent partner Dave McKenna. On this, his second recording, the pianist is heard leading a trio, playing "Secret Love," "Fools Rush In (Where Angels Fear to Tread)," and his own fast-paced blues, "Splendid Splinter," an evocation of baseball great Ted Williams. There are few more consistent pianists than McKenna, who swings beautifully while showing his considerable respect for the melodies of the sometimes out-of-the-way pieces he explores. Though McKenna would grow as a player over the years, this reissue is particularly welcome.

Phil Woods fans will be pleased with **Warm Woods** (RK 44408), made in 1957, years before he became a Grammy winner. Woods was in his twenties and in the mood to celebrate his recent marriage to Chan Parker (the disc includes his "Waltz for a Lovely Wife"). We can hear Charlie Parker in Woods's playing, but also his affinity for big-toned swing altoists like Benny Carter.

For some years, flutist Herbie Mann was one of the biggest stars in jazz, recording Latin music with Chick Corea in his band, or playing what he called Afro-Jazz. To me, he has always seemed entertaining but lightweight. That makes the considerable appeal of **When Lights Are Low** (RK 44095) the real surprise among these Portrait discs. It's a straight-ahead jazz date that features brilliant musicians such as bassist Oscar Pettiford and pianist Hank Jones, as well as the lesser-known trumpeter Joe Wilder, whose buttery tone can be heard on "A Ritual" and the title track. Mann must have chosen his soloists for their burnished lyricism, a quality that also characterizes A. K. Salim's mellow charts on several selections. There's nothing exotic here, just a carefully matched group of players and arrangements that make *When Lights Are Low* easily my favorite Herbie Mann recording.

Michael Ullman



The Oyster Band appears on one of ROM's five volumes of various artists, three of which are recommended.

ALTERNATIVE ANTHOLOGIES

Critics have it easy: We receive free music in the mail regularly, so it's easy to rave about this up-and-coming band or that obscure album without incurring any financial loss. For the average consumer forced to experiment with hard-earned dollars, it's another story. Thousands of new recordings are released every year, and only a handful wind up on AOR or CHR outlets or on MTV. How can you sample the rest without spending a week's salary at your local store? To the rescue are the new breed of CD compilations, for enquiring ears who want to know.

Leading the cavalry, from a label called ROM (which, according to owner Keith Holzman, stands for Really Outstanding Music), comes the **All-Ears Review** (available in stores, or send \$79.95 for a year's subscription of six CDs to ROM Records, P.O. Box 491212, Los Angeles, Calif. 90049). Each disc contains 15 or 16 tracks totaling nearly 70 minutes, culled from independent labels from Santa Moni-

ca to Newton, New Jersey. **Volume 1** (ROM 21001) sets the pace with its inspired mix of zydeco (Rockin' Dopsie), alternative rock (Ben Vaughn Combo, Hugo Largo, Têtes Noires), British punk-reggae (the Mekons), and South African mbaqanga jive (Boyoyo Boys), among other styles. **Volume 2** (ROM 21002) takes in the clean Cajun swing of Filé, the intense zulu pop of Philemon Zulu, the stolid British folk-rock of the Oyster Band, and the German/North African world beat of Dissidenten.

The next two anthologies are more hit or miss. **Volume 3** (ROM 21003), subtitled *Singing Out—Songwriters for the '90s*, is the series' first attempt at a thematic collection. It dips into the Rounder/Flying Fish folk pool of artists, many of whom are musically dull (or, worse, wimpy) and lyrically solipsistic. **Volume 4** (ROM 21004), meanwhile, relies on contrived ethno-pop and meandering acoustic instrumentals. Thankfully, the series seems to have gotten back on track with the latest edition, **Volume 5** (ROM 21005). Subtitled *Cowboys, Lost Loves, New Moons*, the 16-track collection focuses on new strains of country and cowboy music and includes a num-

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SPECIAL CD REPORT

ber of inspired performances—from bluegrass (Sidesaddle, the now defunct Johnson Mountain Boys) to earthy balladry (Robin and Linda Williams's "Across the Blue Mountains," Tom Russell's Johnny Cash-like "U.S. Steel") and assorted mutations (Randy Erwin's laconic update of Roy Rogers's "Cowboy Night Herd Song," the Deighton Family's bawdy clog dance "Two Little Boys").

In addition to pristine sound, each ROM disc offers liner notes that include personnel lists and the titles and catalog numbers of the original albums on which the tracks appear. For the adventurous music fan, this is the place to turn.

Unlike ROM, Homestead Records has a particular vision. One of the country's leading independent rock labels for the postpunk grinding-guitar crowd, it first ventured into compilation territory in 1987 with *The Wailing Ultimate*, a 14-track sampler for the low CD list of \$9.98. The follow-up is *Human Music* (Homestead HMS 100-2; distributed by Dutch East India Trading, P.O. Box 800, Rockville Centre, N.Y. 11571), a 22-track, 68-minute collection of B-sides, unreleased live and studio tracks, and miscellany from the label's roster (with a few cuts from sister indie labels Coyote, SST, and Frontier thrown in for good measure). With it, you can enter a world where jagged, strangulated electric guitars roam the earth, and where melody often has competition from feedback and craggy but heartfelt singing. If that sounds intimidating, it shouldn't: The pop hooks lurking behind New Zealand's Chills, Boston's Big Dipper, and Ohio's Great Plains, to name just three, are very accessible. Granted, the New York axe band Live Skull, the psychotic raving of Happy Flowers, and the razor-edged guitars of the late Phantom Tollbooth may not be for everyone, and the weakest tracks here make you realize why they're "previously unreleased." But if you want proof that not all underground bands are aping R.E.M., here's hope—and in surprisingly crisp CD sound.

And what about all those struggling bands trudging their way through dingy clubs and bars? Thanks to the magic of laser, you can sample them as well. *Musician* magazine invited unsigned bands to send in demo tapes; it then submitted the

best 20 to an all-star panel of T Bone Burnett, Elvis Costello, Mark Knopfler, and producer Mitchell Froom. The ten subsequent selections—presented on the CD-only **Best of the BUBs** (Warner Bros. PR 4757)—perfectly reflect the magazine's aesthetic: The music is cleanly produced, drenched in American roots music, and tasteful to a fault. The contest "winner" and leadoff track, Lonesome Val's "Front Porch," is typical: A languorous bit of country-rock, it has the sly phrasing and subtle orchestration of an old Patsy Cline song, but it poses no threat to civilization. Neither do the "finalists," which encompass bar-band rock (Adam's House Cat, Idle Hands), pleasant cowboy-folk (Tom Pirozzoli), cabaret-folk (Diane Ponzio), and clones of Los Lobos (Subdudes) and Oregon (Howland Ensemble). Standing out like some graphic-relief map are the Conversation's enigmatic "Wishing Well" and Strange Cave's Elton John-with-strings "Love Sounds Like Rain."

Meanwhile, *CMJ New Music Report*, the *Billboard* of the college-radio scene, held its own best-unsigned-band competition, narrowing down 200 tapes for inclusion on **Ten of a Kind** (RCA 8567-2). Even more so than the *Musician* sampler, this collection, CMJ's third, is all over the map—from bands who want to be the new Survivor (LaBlanc), Police (the Distance), Metallica (Kid Crash), and Georgia Satellites (Titanics). Raging Fire's "The Marrying Kind" is one of the best examples of Nashville's rumored "rock" scene, while Lazy Susan's "Faith Has Another" is a good display of coffeehouse harmonizing.

Best of the BUBs and *Ten of a Kind* each have a skimpy playing time of less than 40 minutes. But after plowing through the highs and lows of each disc, weary listeners may feel that ten tracks are more than enough. *David Browne*

CYPRESS ARTISTS

Cypress was founded in 1986 by former CBS Records business executive Craig Sussman, who focused his attention on a neglected market segment: listeners ages 25 to 49 who want harder-sounding music than new age, willing to spring for CDs with superb fidelity. Sussman signed sev-

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SPECIAL

 REPORT



eral artists who were popular with these "higher-income buyers" in the '60s and '70s, built a state-of-the-art recording studio, and eventually got A&M to distribute the label. Cypress had immediate success with *Famous Blue Raincoat*, Jennifer Warnes's album of Leonard Cohen songs, which has sold more than 750,000 copies worldwide.

Several of Cypress's most recent releases feature traditional singer/songwriter introspection, lyrics that address social issues, and a song about or recorded by Marvin Gaye—just the thing for the targeted generation of consumers who cherish the music of their youth. Although the forthright marketing sounds calculated (it is a business, after all) and though the label has released a few disposable albums, it has produced enough stunning recordings to defuse my skepticism—but then, I fit snugly in the middle of its demographic.

Who I Am (Cypress YD 0111) marks Gary Wright's return with a splendid album of rock tunes flavored with instrumentation by some of South India's finest musicians. The subcontinental seasoning adds an eerie earthiness (and an unfamiliar edge) to the electronic-keyboard-heavy numbers. This presentation combines the Third World appeal of Paul Simon's *Graceland* with Wright's solid rock sense.

Leaner but nearly as engaging is **Lips Against the Steel** (YD 0120), by original Dire Straits member David Knopfler. Amid fascinating instrumental textures, Knopfler delivers desperate, often cynical lyrics with a husky, sardonic voice. Although repetitiveness occasionally dilutes his songs, the material is intelligent and evocative.

Best of these three is **Slow Dance** (YD 0115), the debut solo album by Southside Johnny Lyon. His smoky crooning suits the imagery of his urban themes and lush, romantic songs and is supported by sophisticated adult-pop arrangements devoid of sonic tricks. Sax solos and a fine horn section balance the synthesizers, although Lyon's gritty, soulful voice is at odds with the slickness of drum machines. Longtime buddy Bruce Springsteen co-authored "Walking Through Midnight," the album's only despondent cut.

As for Kenny Rankin, the good news is

■
 The Juke-less Southside Johnny offers one of the best Cypress CDs.

that his new wife, Aime Ulrich, got him back into the studio. The bad news is that the lyrics she wrote for most of **Hiding in Myself** (YD 0114) are pretty meager and amateurish. And it gets worse: The strings that redeem the title cut's indulgent words run amok in Jimmy Webb's "She Moves, Eyes Follow." The prowling, growling arrangement of Marvin Gaye's "Trouble Man" overwhelms melodic vocals by Rankin, who is more in his element with the spare acoustic production of the same writer's "Let's Get It On." While his voice is unparalleled still, this is not the album Rankin fans have waited ten years for.

Canadian Shirley Eikhard is known for her songwriting and powerful voice, but her American label debut, **Taking Charge** (YD 0110), makes you wonder what the fuss is all about. Cheesy walls of synthesizers inflate songs of childish heartache and ideals; though her voice soars and quakes, she needs to harness it and get more interesting material than these chic pop nothings.

Veteran songwriter Tony Wilson fares better on **Walking the Highwire** (YD 0113), with his cleverly crafted songs on pop music's basic themes: sought, found, and lost love. Wilson's catchy vocals usually make it all work. His endless choruses, however, are a curse: Many are repeated four times, while the song title "Who's Got the Money" is uttered *forty* times, honest. Meaty guitar and sax solos are conspicuously upfront in the mix, as if to sound crisp on AM radio.

Not surprisingly, familiar names and songs abound on Cypress's two novel collections of various artists. #1 with a **Bullet** (YD 0112) gathers demo tapes of songs that, given away by their creators, went on to reach the top of the charts

(which charts is never explained). What a weird idea. In most cases, however, the songs here—almost all performed by the writers themselves—are stripped down and sound fresher than their popular progeny, highlighting the material rather than a producer or an established superstar. The rough sound of "Walk Like an Egyptian" (written by Liam Sternberg, performed here by Marti Jones) is wonderful, complete with what must be garbage-can percussion. "Nightshift," played by writers Dennis Lambert and Franne Golde, isn't all that different from the full Commodores' hit, but it's a shock to learn that "We Built This City," as originally performed by composer Martin Page, began as a dance ditty before the Starship powered it up. The rest are drippy love songs and empty-headed dance numbers that are fun if you don't feel like thinking.

Originally a music magazine and cross-label cassette sampler, **Cymbiosis** (YD 0121) has gone CD. The ambitious Vol. 2, No. 1—a 128-page CD booklet/magazine together with a 66-minute CD—features printed interviews and recent recordings by fusion refugees from the '70s. The melodic jazz-rock of bassist Stanley Clarke and the punchy ensemble work of (former Journey) drummer Steve Smith and Vital Information are dynamic. Bill Bruford's avant-garde techno-funk cuts are as challenging and rewarding as you'd expect from the former King Crimson percussionist. But where the songs by rhythm frontmen succeed, prosaic high-tech numbers from Pete Bardens (late of Camel) and Tangerine Dream and new-age filler by Steve Kindler (Mahavishnu Orchestra) with Teja Bell fail to generate much excitement. At least you have something to read while you ignore them. *Richard Price*

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Hafler's IRIS preamp, available with or without remote

(Continued from page 14)

MM/MC phono section. Additionally, Hafler says the IRIS remote will work with future Hafler components through an external data-bus system. *Hafler, 613 S. Rockford Dr., Tempe, Ariz. 85281.*

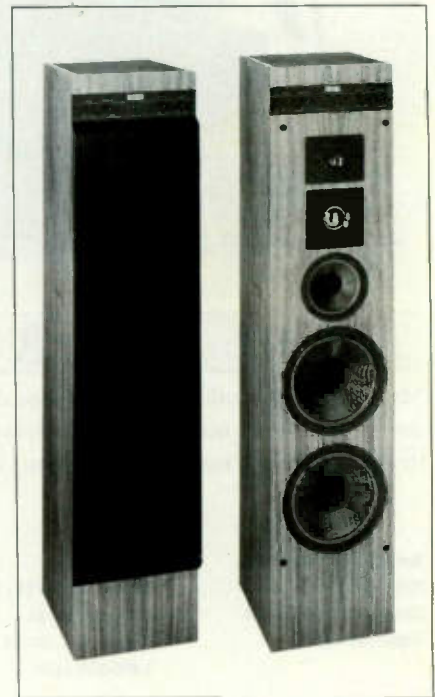
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Altec's 512 amplified tower loudspeakers

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